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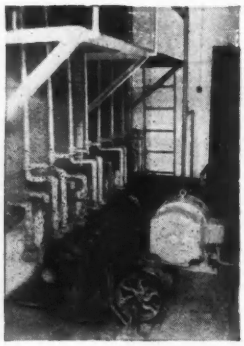

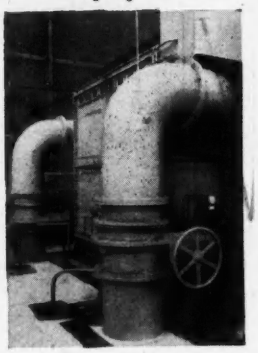

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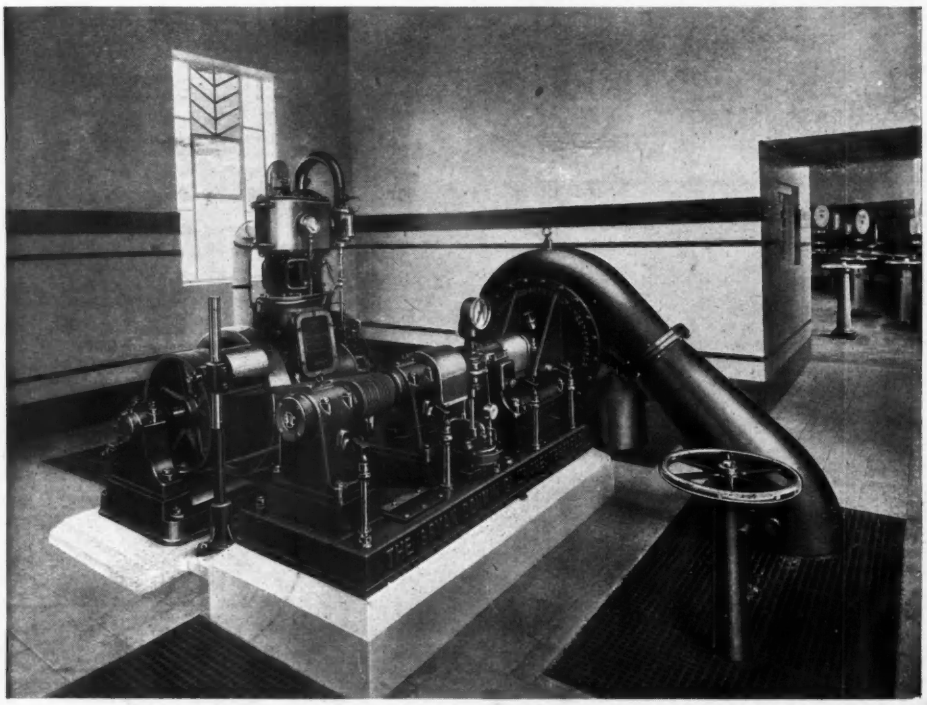

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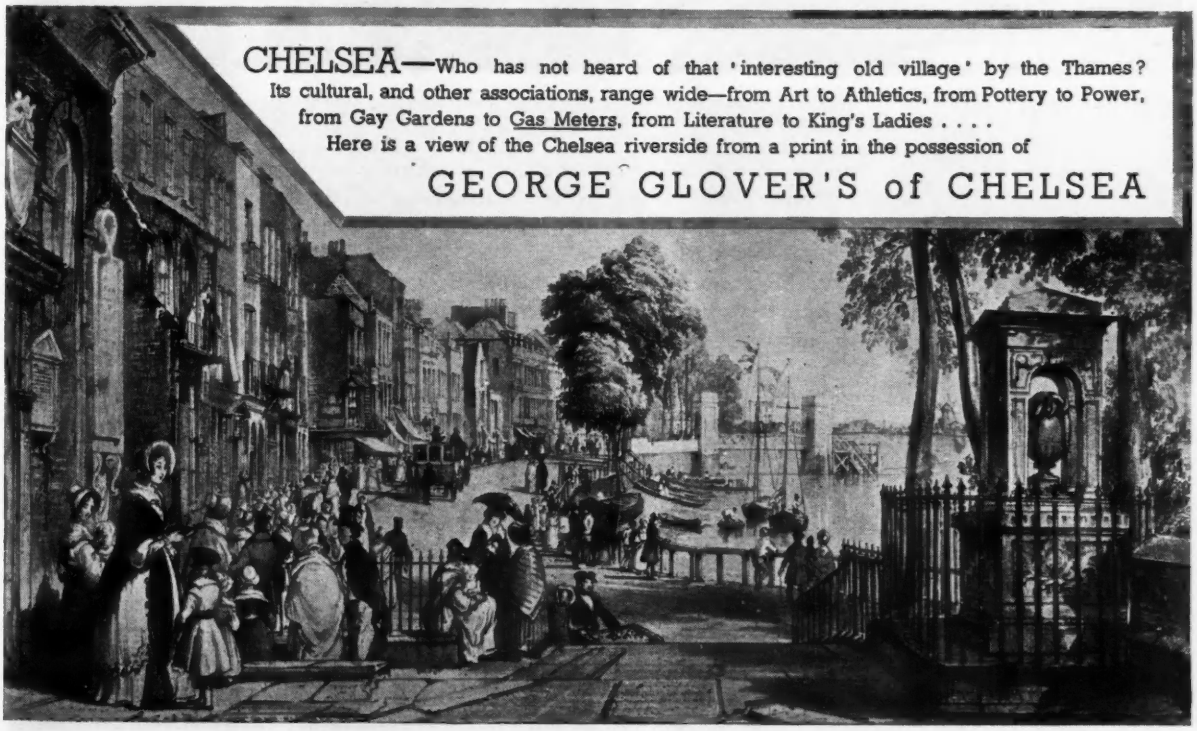
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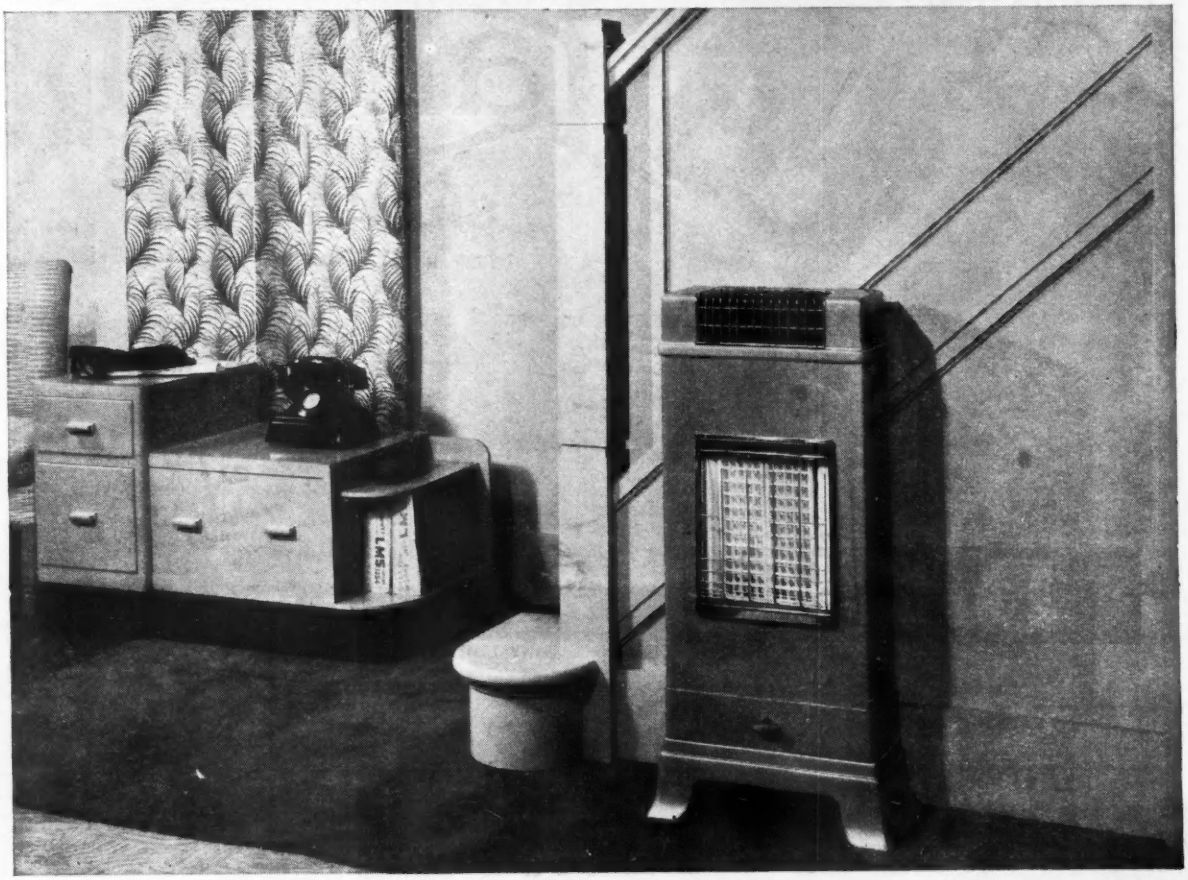

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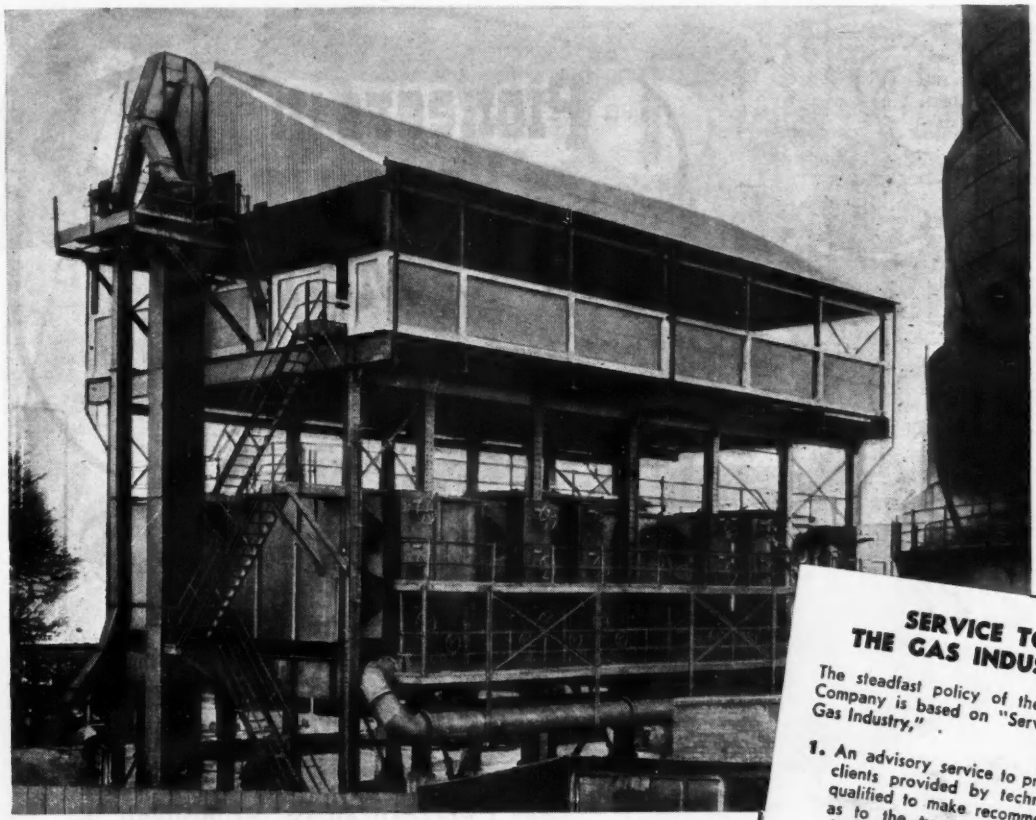

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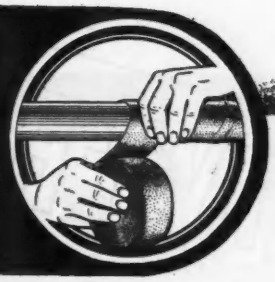

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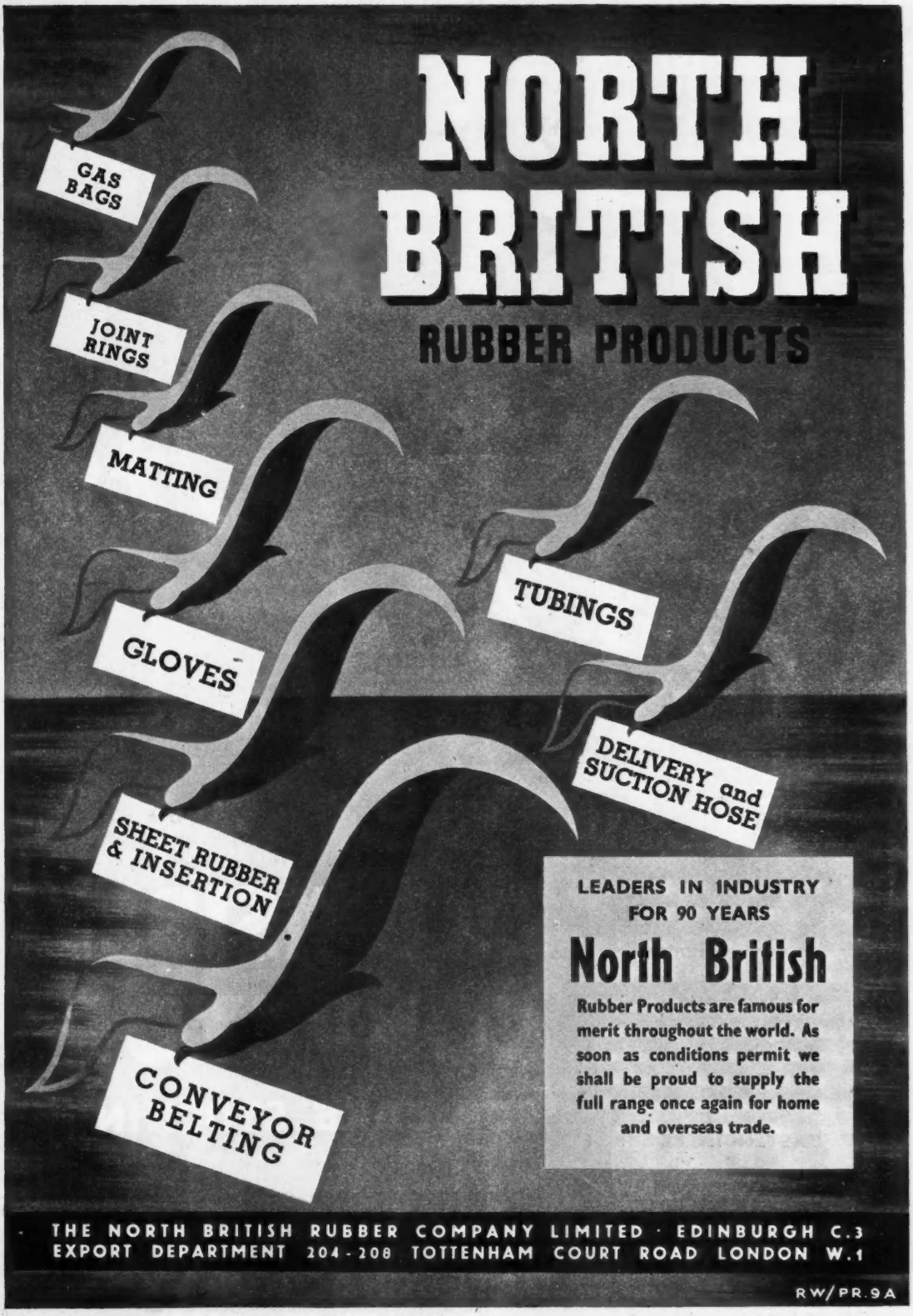
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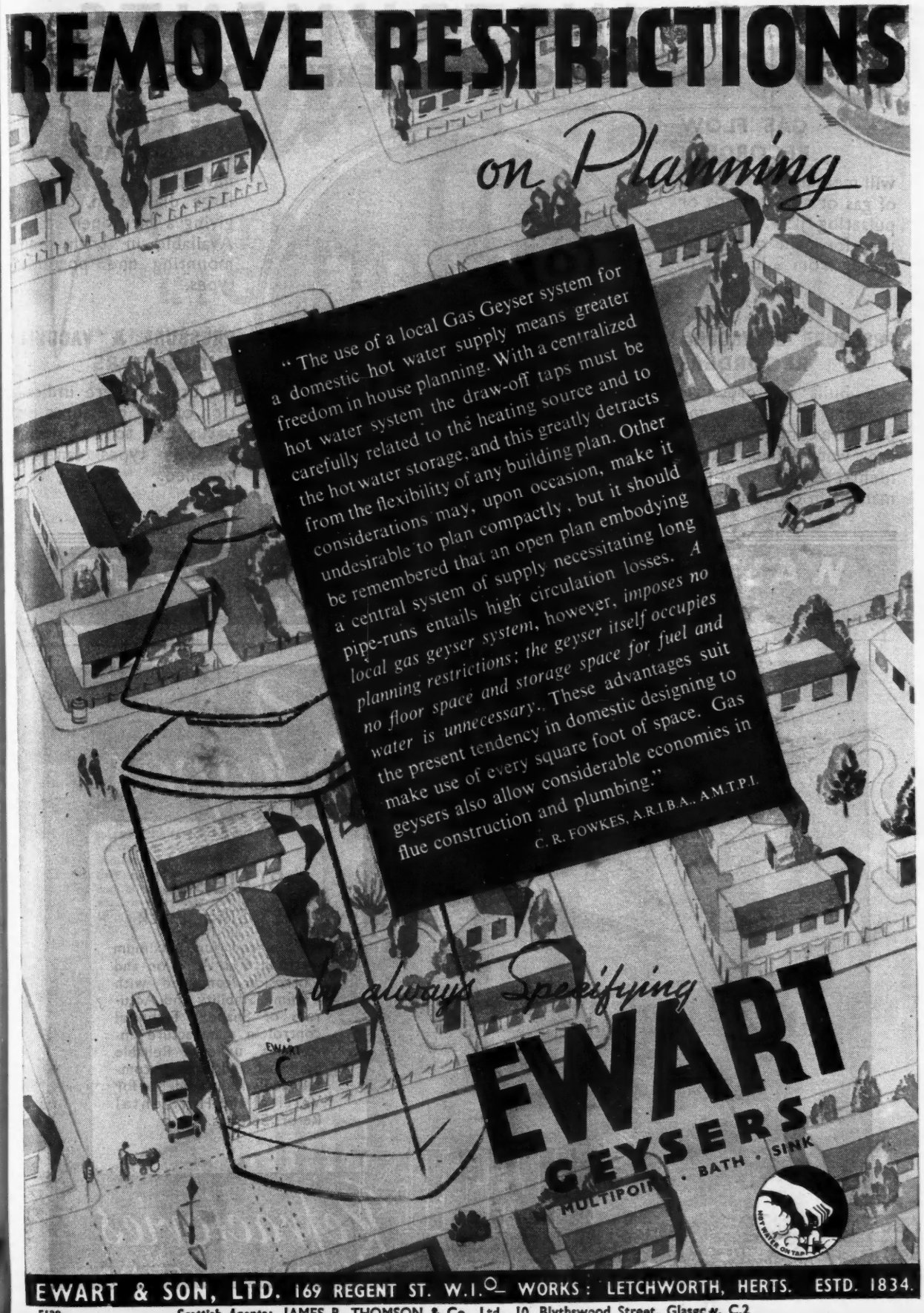
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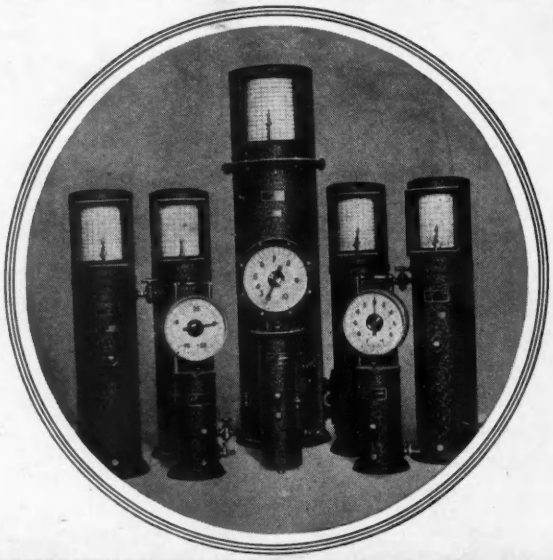

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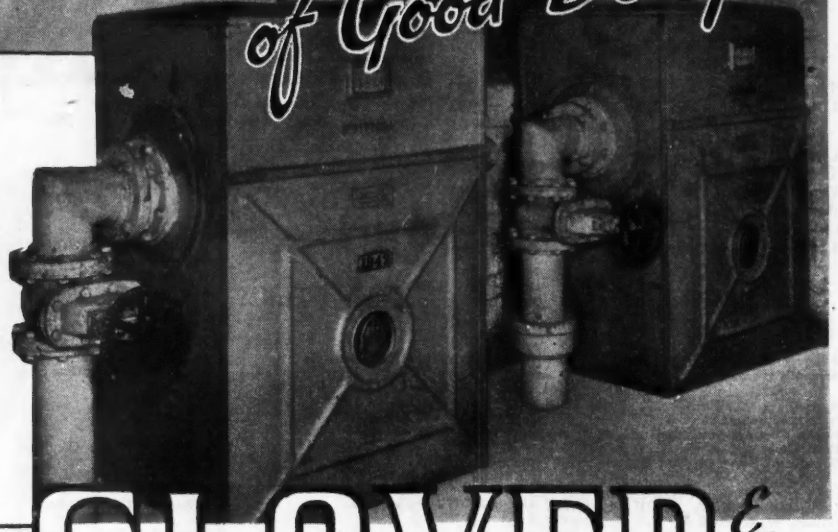

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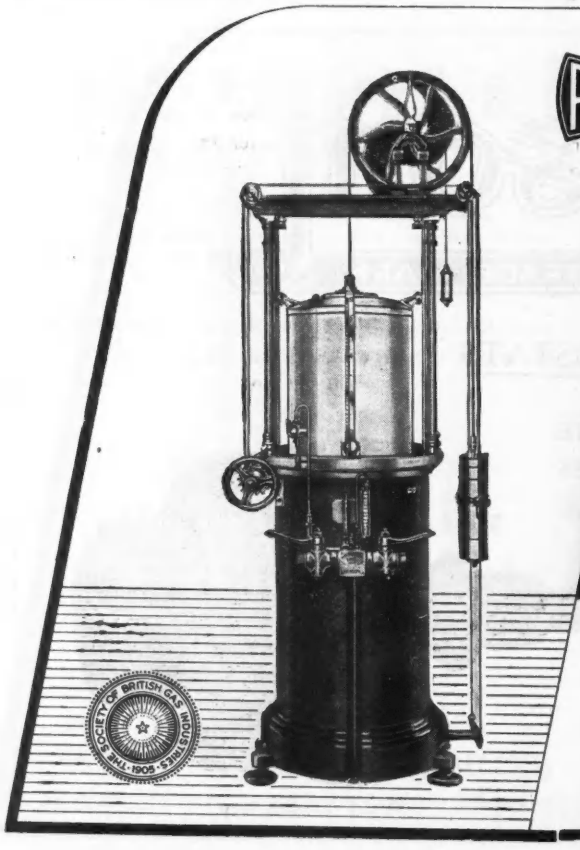

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GAS JOURNAL, SEPT. 19, 1945

VOL. 246 97th YEAR No. 4296

EDITORIAL NOTES

TRANSITION

IN the present transition stage from wartime to more orderly conditions the Gas Industry is confronted with many difficulties and problems, and with the shadow of nationalization in the background there is inevitably a note of hesitancy in the air. The winter will be on us before long, and the winter outlook as regards both labour and coal supply is grim indeed. Unless there is some improvement in these first essentials to the giving of a satisfactory gas service there is likelihood of a shortage in gas supply, particularly in view of the increased demand by gas consumers either because they cannot get coal or because they are determined to conserve what supplies they have. Coal stocks of gas undertakings generally are very low indeed, and it seems evident that unless there is some improvement in the delivery situation many undertakings will find themselves depleted of stocks by the turn of the year. The immediate overriding difficulty, however, is labour supply, which matter we discussed in these columns a fortnight ago. To some extent the Industry has made use of prisoner of war labour, and in some instances of our own troops, but these do not constitute any happy solution, and hope must centre on the speeding-up of demobilization. It is, of course, encouraging to note that the high priority which gas supply must have in peacetime reconstruction has been recognized in the system of releases for munition workers devised by the Ministry of Labour's Joint Consultative Committee, on which the T.U.C. and the British Employers' Confederation are represented, with a view to meeting the changing needs of industry in the switch-over to peace production. Releases are to be in a priority order of five categories, and former experienced workers in the Gas Industry are mentioned in Category 2.

We have mentioned the shadow of nationalization. The Government have made plain their intention of going ahead as speedily as possible with the nationalization of the coal industry, and we suppose that nationalization of gas and electricity will follow as a logical corollary to the Government's policy in respect of coal—the composite policy of the nationalization of fuel and power. With both gas and electricity the difficulties in implementing nationalization will be greater than in nationalizing the coal industry, because of the questions involved in municipal and company ownership. It is to be hoped that, whatever the eventual outcome, the Government will leave the gas and electricity industries to be run by those who know these industries; and in any case there seems to be no grounds for suggestion that nationalization of the Gas Industry will be by way of compulsory municipalization of company undertakings. And in this transition stage, marked, as we have said, by an air of hesitancy, one wonders if and when the Heyworth Committee will report its findings on the Gas Industry, and to what extent the report, dealing with the existing framework of the Industry, will, in view of nationalization plans, have point and weight.

UNITY IN WALES

MEETING at Porthcawl last Thursday for the first time since 1938, the Wales and Monmouthshire Association of Gas Engineers and Managers consummated the harmonious union of North and South by installing a North Wales member as President for the first time in its 40 years' life. In the transition from war to peace Wales will have many problems to solve, problems that vary widely in character and incidence from the South, with its old and new industries, to the North, predominating in holiday resorts, and it augurs well for their solution that the Principality should be served by one Association. The industrial South is ripe for a bold approach to the question of regionalization of manufacture and distribution, whether or not on the lines of the gas grid discussed at the Cardiff meeting last year. Such integration is not so likely in the North, where undertakings are more widely spaced, but the job of catering for holiday makers is a not unimportant industry, and with Government Departments returning to London from some of the main resorts, that industry must be rehabilitated without undue delay. North and South may well help each other in the solution of their problems which, when all is said and done, are on a common basis, the provision of an adequate economic and efficient supply of gas.

We shall deal in later issues with the Porthcawl meeting, at which Major E. Ivor David, Regional Gas Officer, read a Paper on "South Wales Gas Coals." Although he estimated that there were enough coal reserves to meet the needs of the Gas Industry for another hundred years, he referred with some concern to the fact that the output to bituminous coals had declined from 26.9 million tons in 1938 to 19.6 million tons last year. He had a good deal to say about the need for cleaning coal, and visualized in the future the Gas Industry in Wales owning its own central washery.

Continental Collaboration

At the invitation of the Fuel, Power, and Public Utilities Branch of the Allied Control Commission for Germany (British Element), a Gas Consultative Panel has been appointed to serve as the channel whereby, *inter alia*, the Commission will consult the British Gas Industry on technical and relevant matters concerning the production, distribution, and utilization of gas, and the British Gas Industry will suggest to the Commission matters relating to these subjects which might usefully be investigated in Germany. The panel consists of representatives of the Institution of Gas Engineers, the Gas Research Board, and the Society of British Gas Industries, and has already submitted a number of suggestions to the Commission. Colonel C. M. Croft, President of the Institution, and Dr. W. T. K. Braunholtz, Secretary, are respectively Chairman and Secretary of the Panel.

The Toughest Winter for Fuel

Representatives of 250 women's organizations in London and South-East England were told by Mr. W. G. Nott-Bower, Deputy-Secretary of the Ministry of Fuel and Power, at a meeting at the Institution of Civil Engineers last Friday, that he was afraid that all the indications in the fuel outlook pointed to the coming winter being the toughest for six years. Stocks in Government coal dumps last winter saved a lot of hardship, but the greater part of those reserves had gone, and in London and South-East England had disappeared completely. Industrial consumers had made big economies in consumption, but the shortage was particularly acute in bituminous and in gas coal, and the domestic problem was even more difficult than the industrial. Householders should begin their economies at once, and should refrain from using coal, gas, or electricity when not absolutely necessary until the real part of the winter set in. This might not happen until after Christmas. The household coal shortage was accentuated by a shortage of trucks for transport, notably in the house-coal producing areas of the Midlands. A severely cold spell in January, February, and March might also hold up transport on the railways: hence the need for the householder to build up a mid-winter reserve in advance by economizing the use of the fuel he was permitted to have.

Mr. Nott-Bower advised domestic consumers to refrain from using electric fires between 8 a.m. and 12 noon to avoid too great a pressure on the supply, with a possible breakdown such as happened in some districts last winter.

The GAS JOURNAL has returned to its offices at No. 11, Bolt Court, Fleet Street, London, E.C.4 (Tel.: Central 2236), to which address all communications should be forwarded.

Diary

Sept. 26.—Scottish (Western District) Gas Salesmen's Circle: Paper by R. J. Gregg, 137, Sauchiehall Street, Glasgow, 5 p.m.

Sept. 26.—Yorkshire Junior Gas Association joint visit with West Riding Gas Salesmen's Circle to Yorkshire Kitchen Planning Exhibition, Sheffield.

Oct. 6.—Yorkshire Junior Gas Association: Annual Meeting, Great Northern Hotel, Leeds, 2.30 p.m.

Oct. 10.—Southern Association of Gas Engineers and Managers: Annual General Meeting, Grosvenor House, Park Lane, London, W. 1, 2.45 p.m. Presidential Address by W. A. Howie. Luncheon at 1 p.m. General Committee, 11.30 a.m.

Oct. 17.—Eastern Counties Gas Engineers' and Managers' Association: Autumn Meeting, Grosvenor House, Park Lane, W. 1.

Oct. 17.—Institute of Fuel: Royal Geographical Society. Melchett Lecture by Professor C. H. Lander, C.B.E., 6 p.m.

Oct. 25.—Town and Country Planning Association: Lunch-time meeting, 28, King Street, Covent Garden, W.C. 2. Talk and discussion on "Town Planning and District Heating."

Nov. 27–28.—Institution of Gas Engineers: Autumn Research Meeting.

Dec. 6.—Town and Country Planning Association: Lunch-time meeting, 28, King Street, Covent Garden, W.C. 2. Talk and discussion on "Heating the Family Home."

Personal

The Directors of South-Eastern Gas Corporation, Ltd., announce that Sir DAVID MILNE-WATSON, Bt., T.D., D.L., LL.D., has resigned his position as Chairman, but will remain on the Board as a Director. Mr. A. E. SYLVESTER, Governor and Managing Director of the Gas Light and Coke Company, has been elected Chairman in his place.

* * *

Mr. G. LE B. DIAMOND, Engineer and General Manager of the Rochester, Chatham, and Gillingham Gas Company, who has held the office of Regional Gas Engineering Adviser and Deputy Regional Controller during the war, has been appointed Regional Controller of the Ministry of Fuel and Power in the South-East and succeeds Sir John Dalton, who has resigned from the office of Regional Controller for London and the South-East. Mr. O'HALLORAN has been apponted Regional Controller for London.

* * *

Mr. D. J. COLVIN, who has been Engineer and Manager of the Ormskirk District Gas Company since 1940, has been appointed General Manager of the Caledonian Gas Corporation, Ltd. His successor at Ormskirk will be Mr. J. W. CASTLE, Engineer, Manager, and Secretary of the Leyland Gas Company.

* * *

We are informed by Mr. C. C. Walmsley, Managing Director of the Sunderland Gas Company, of the following changes in personnel of that Company: Mr. W. L. ROBERTSHAW, Engineer, and Mr. C. F. BARROW, Distribution Superintendent, who have respectively completed 33 years' and 41 years' service with the Company, will retire on superannuation on Sept. 30. Mr. F. P. FALL, Assistant Engineer, has been appointed Engineer; Mr. W. D. KIRKWOOD, Works Superintendent, will become Assistant Engineer, and Mr. R. WILLIAMSON will succeed Mr. Barrow as Distribution Superintendent.

* * *

Mr. S. H. BALSOM, Distribution Superintendent to the Wrexham Gas Company, has retired after completing 55 years' service with the Company. Mr. Balsom served in France and Flanders from 1914 to 1919 and was made Distribution Superintendent in 1912. Originally due to retire in 1943, he volunteered to carry on duty with the Company until the cessation of hostilities in Europe.

* * *

Having been appointed to a position outside the district, Mr. J. A. SPEERS has decided not to take over the Presidency of the Manchester and District Junior Gas Association at the annual meeting next month. Mr. F. CARTLEDGE (Oldham), Vice-President, has accepted the office of President for the coming session.

* * *

Lt.-Col. RICHARD H. LEWIS has been released from the Army and has resumed his duties with Bratt Colbran, Ltd., as Sales Manager, Gas Department. Mr. A. A. BISHOP, who was a member of the Auxiliary Air Force until he was invalided out in 1940, after which he served as Assistant Engineer and Manager to the Bexhill Gas Department for four years, has joined Bratt Colbran, Ltd., and will be Sales and Technical Representative in the South.

* * *

Mr. D. V. STEED, son of Mr. R. V. Steed, Chairman and Managing Director, has been appointed Sales Manager and Representative of Dougall's Gas Meters, Ltd.

* * *

The Minister of Fuel and Power has appointed Mr. J. E. H. SIMON to be his Principal Private Secretary.

* * *

The marriage was solemnized on Sept. 12 at St. Phillip's Church, Buckingham Palace Road, London, of Mr. L. VAN DE VELDE, of Ascot Gas Water Heaters, Ltd., and "Sherry," daughter of Mr. and Mrs. J. Taylor. To mark the occasion and as an indication of the esteem in which Mr. Van de Velde is held, several of his Gas Industry friends made a small presentation prior to the ceremony.

Obituary

The death took place on Sept. 10 at Edinburgh of Mr. FRANK MCGARRIE, formerly of Alder & Mackay, Ltd., meter manufacturers.

* * *

The death has occurred of Mr. JAMES BRYANT, Foundry Sales Manager, Staveley Coal and Iron Co., Ltd.

After Sept. 30 all types of contractors' plant may be purchased without a "permit to purchase" from the Ministry of Works. Prospective purchasers should, therefore, place their orders direct on manufacturers.

In Leamington, street lamps will be put on slightly later than they have been during the past few weeks, and, with the exception of the all-night lamps, will be extinguished at 11 p.m. The all-night lamps will continue to be used as at present, but at a reduced intensity. In the Parade the lighting is to be diminished, and experiments as to how best this can be done in the interests of public safety are being carried out.

Letter to the Editor

Free Space in Horizontals

DEAR SIR,—I was very interested to read in the "JOURNAL" of Aug. 22 the report of the work carried out at the Fuel Research Station on "The Effect of Free Space in the Carbonizing of Coal in Horizontal Retorts."

From the figures given it would appear that the extra therms per ton of coal were obtained at the expense of throughput. It would be interesting to know whether any attempt was made to maintain the normal throughput of the bed—*i.e.*, 10 tons per day—by shortening the carbonizing period to compensate for the reduced weight of charge. No reference appears to have been made to the fuel consumption in the producer, and from the writer's experience one would expect to find that the extra gaseous therms obtained would be at the expense of a higher fuel consumption in the producer per ton of coal carbonized. Were any observations made as to producer fuel consumption?

I feel sure that Dr. King and his colleagues will agree with me that this question of fuel consumption is of no little importance, in view of the even greater necessity in the future of obtaining the maximum number of heat units from each ton of coal carbonized.

The last two or three gaseous therms which may be left in the coke are not completely lost, since they will be sold as coke and thus have a revenue value, and, moreover, serve to make the coke more useful, particularly to the domestic consumer.

It seems to me, therefore, that so long as we are a two-fuel Industry, it is doubtful whether therms per ton are really the be all and end all of our efforts, but rather the aim should be the maximum throughput of coal per day, with the maximum total production of useful heat units per ton carbonized, whether in the form of gas or coke.

Gas-Works, Yours faithfully,
New Southgate, N. 11. C. A. DEAS.
Sept. 10, 1945.

British Gas Council

A Meeting of the British Gas Council was held at Gas Industry House on Tuesday, Sept. 11. Mr. A. E. Sylvester, F.C.A., presided.

The Chairman having recorded with deep regret the untimely death of Mr. G. Dixon, of the Nottingham Gas Department, several members present, including Dr. Evans, Col. W. Moncrieff Carr, Mr. E. Crowther, and Mr. H. E. Bloor, paid tributes to their late colleague.

The nomination was reported of Mr. F. A. Ricketts in place of Mr. D. H. Helps (resigned) as a member of the Council.

Mr. Henry Berry, succeeding to the Chairmanship of the Conjoint Conference of Public Utility Associations, expressed appreciation of the fact that throughout the whole history of the Conjoint Conference there had been solid support from the Gas Industry. He said it had always seemed to him that those with similar problems should try to solve them along the same lines. He paid tribute to the services of Colonel Ogilvie on the Conjoint Conference, and expressed the hope that the bonds that bound the different associations together on the Conference would be even closer in the difficult post-war situation which confronted them.

EXECUTIVE BOARD.

Result of the Ballot.—It was stated that members of the Council had been advised of the election of the Executive Board as a result of the ballot by members of the Council held in July, as follows:

Mr. F. C. Briggs	Midland District	(Company)
Mr. T. Brown	London ,,	,,
Col. W. Moncrieff Carr	North-Western District	,,
Mr. C. H. Chester	Southern ,,	,,
Mr. E. Crowther	Northern ,,	,,
Dr. E. V. Evans	London ,,	,,
Mr. D. Fulton	Scotland ,,	(Municipal)
Mr. C. H. Leach	North-Western District	(Company)
Mr. A. W. Lee	Midland ,,	(Municipal)
Mr. C. S. Shapley	Yorkshire ,,	,,
Col. H. C. Smith	London ,,	(Company)
Mr. S. E. Whitehead	Southern ,,	,,

The following nominations having been received from the Districts unrepresented, the Council thereupon elected these representatives to the Executive Board:

Mr. Raymond Prince	Eastern District	(Company)
Mr. R. J. Auckland	South Wales District	(Company)
Mr. R. C. Taylor	South-Western ,,	(Company)

Regarding the coal position it was resolved that as soon as possible after the Minister of Fuel and Power had been nominated, he should be requested to receive a deputation from the Conference with regard to supplies and price of coal; and that the deputation should consist of the Coal Committee of the Conference (with power to add to their number), with the addition of Mr. W. C. Bexon (representing Scottish electricity interests). Severe criticism was directed at the practice of diverting gas coal to other industries. One undertaking in particular pointed out that it was obliged to carbonize some 8,000 tons per annum more than it otherwise would require to do, on account of the unsuitability of the coal delivered to them. Mr. C. H. Chester the Council's representative on the Public Utilities Coal Committee, undertook to take up this matter at the next meeting of the Committee.

It was stated that the Ministry of Fuel and Power had put forward a suggestion for effecting a saving in coal by reducing gas pressures to consumers during the night time. This suggestion gave rise to considerable discussion, and as it was stated that the suggestion had also been put to the Co-ordinating Committee of the Gas Engineering Advisory Boards, it was agreed to leave the matter to be discussed by the Co-ordinating Committee in question.

It was stated that at the conference of Women's Organizations on the winter fuel situation, which was to be held at the Institution of Civil Engineers on Sept. 14, first-hand information on the fuel position would be given. Mr. Nott Bower, the Assistant Secretary to the Ministry of Fuel and Power, would preside.* The Conference only covered London and the South-Eastern Regions, but it was proposed that similar Conferences should be held in Scotland, Wales, and other parts of England during the coming months.

It was reported that the representatives appointed by the Women's Gas Council to attend the Conference were as follows:

Headquarters:

Miss K. Halpin	Chairman of the Executive Committee.
Mrs. G. Abbott	Organizing Secretary.
Miss Matheson	Branch Secretary.
Mrs. Stokes	Member of the Executive Committee.
Miss Pidsley	Member of the Staff of the Council.

The British Gas Council had been invited to send representatives as observers, and it was agreed that Mr. W. L. Boon and one further representative should be asked to represent the Council at the Conference in question.

It was stated that copies of the Interim Report of the Survey Committee of the British Tar Confederation had been circulated together with extracts from letters on the subject received from members, and it was agreed to refer its consideration in the first instance to the Executive Board.

Date of next meeting of the Council, Oct. 9.

* See p. 394.

Display and Decorative Lighting

During the Victory celebrations when Government buildings were floodlit, the Ministry of Fuel and Power raised no objection to the floodlighting of other premises, or to various other forms of outdoor illumination. This special concession for Victory Days only ceased on Aug. 17; and the Ministry of Fuel and Power reminds local authorities and the public of the restrictions on all outdoor display and decorative lighting announced on May 26.

Such lighting includes floodlighting of buildings, structures, and gardens, illumination of hoardings or fascias of shops, other lighting of or on the exterior of buildings when not reasonably necessary for public safety, decorative lights on piers, parks, gardens, promenades, fair grounds, bandstands and the like, and searchlights or beacons other than those operated for military purposes or for the benefit of shipping or aircraft.

The fuel situation may well make the coming winter more difficult than any of the war winters, and the need for economy in the use of coal, gas, and electricity is therefore more urgent than ever. The announcement does not apply to street lighting, but the public is reminded that waste of fuel and the consumption of fuel for advertisement purposes (including the display of goods in the course of any business) are already specifically prohibited under the Control of Fuel (No. 3) Order, 1942.

The Annual Report of the Hinckley Gas Department shows a gross profit of £21,129 and a net profit of £2,357. In presenting the report to the Council, Mr. J. Bennett, Chairman of the Gas Committee, paid a high tribute to Mr. A. B. Britton, Engineer, Manager, and Secretary, and said that at one time it was anticipated there would be a loss on the year's working. Mr. Britton gave a detailed report on the serious coal position, and the Council passed a resolution asking the Ministry of Fuel and Power to take all necessary steps to improve the deliveries of coal, otherwise the supply of gas would inevitably have to be cut down during the coming winter.

Owing to the Wanton Destruction of lighting equipment in certain parts of Glasgow, and the difficulty of making replacements, Mr. E. J. Stewart, Inspector of Lighting, has warned the public that it may become necessary to make local cuts in the service. The matter is being considered by the Police Committee.

The Exhibition of permanent house plans which shows the results in the competition recently organized by the House-Building Industries' Standing Committee will open in Taunton on Oct. 6, where it will form part of the Local Council's campaign in Taunton's "Thanksgiving Week" effort for National Saving. The Exhibition includes, apart from the plans, seven models, some of which are complete with scale models of utility type furniture.

North British Association of Gas Managers

The Annual Meeting of the North British Association of Gas Managers was held on Sept. 7 in the Grosvenor Restaurant, Glasgow, when Mr. ALEXANDER JAMIESON, of Johnstone, the President, took the chair.

The PRESIDENT, opening the proceedings, said that with the end of hostilities they, as gas engineers, had hoped for a lessening of their difficulties, but it would seem that they were to have one of their most serious problems with them for a very long time. He referred to the shortage and quality of fuels. The coal shortage had now reached such an acute stage that stocks were counted in days instead of weeks or months, as in pre-war days, and, unless the utmost economy was carried out by all sections of the fuel consuming public and the fuel producing industries were made to realize their responsibilities, serious hardships would surely result. They were about to enter the winter with coal stocks amounting to about one-third of what they were at the same period last year, and it required no great imagination to realize what would happen should a long period of cold and foggy weather come along. He appealed to the public to save gas at every opportunity.

The PRESIDENT said it was with sincere regret he had to intimate that since last they met in the spring of this year the following members had died : William Mann, Stevenston; Harry H. Gracie, Edinburgh; Thomas Marks, Glasgow; Alexr. Gillon, Glasgow; Harry Coates, Burnley; and David Robertson, Dunoon, who was the oldest member of the Association. He desired also to make reference to the loss sustained by their Industry through the deaths of two of their most prominent colleagues—Thomas Carmichael, of Portsmouth, and George Dixon, of Nottingham.

Colonel C. M. CROFT, President of The Institution of Gas Engineers, thanked the members for the invitation to Dr. Braunholtz and himself to be present. He brought good wishes for a successful meeting.

The PRESIDENT said they had with them Mr. H. G. Ritchie, who had just retired from the Managership at Falkirk after serving the Industry for 50 years. They congratulated him and wished him many happy years of retirement.

Mr. RITCHIE replied briefly.

The Annual Report and Financial Statement having been approved, Mr. ROBERT STURROCK, Secretary, intimated that Mr. James McLaren, Bathgate, and Mr. David Gold, Doune, had been elected to Ordinary Membership, and Messrs. Harold Friedman, London, and A. C. Bureau, Leven, to Extraordinary Membership.

William Young Memorial Lecture

The PRESIDENT said they had invited Dr. E. W. Smith, for the second time, to deliver the William Young Memorial Lecture.

Dr. SMITH then delivered the Lecture, which was published in full in last week's "JOURNAL."

Mr. D. D. MELVIN, Edinburgh, proposing a vote of thanks to Dr. Smith, said the William Young Memorial Lecture was inaugurated in 1910 to commemorate the memory of a great Scotsman, scientist, and expert in matters connected with the carbonization of coal and shale. The inaugural Lecture was delivered by Dr. Daniell in 1911 under the title of "William Young: An Appreciation," and gave them a record of his life and work, of the experiments he carried out, of the many problems he investigated and solved, and of the many technical contributions he made. Since the inaugural date 16 lectures had been delivered. This was the first occasion that anyone had been invited for the second time to deliver the Lecture. In doing so, they had tried to show their appreciation of Dr. Smith and of the great services he had rendered to the Industry. When he came among them as Director-General of Gas Supply he gave them a vision; more important, he imbued the younger members of their Industry with enthusiasm and a desire to give greater service. His decision to resign was a matter of great regret to them all. Their victory in the war had been the result of the acceleration of research in many fields. In some of these the Gas Industry had participated. Some of the outstanding developments so far disclosed, like the jet propelled aeroplane, Radar, and the atomic bomb, showed what could be accomplished. Research could be speeded up, given the necessary finance, staff, and facilities, and they had probably seen work which might normally have taken more than a quarter of a century to accomplish completed in a tithe of that period. There was a lesson for them here. Dr. Smith had given a full and adequate reply to the query raised at the Institution meeting, although he had only covered part of the ground. The facts and figures should, however, be adequate to convince all of the need for a considerable extension of research facilities, particularly in the problems and investigations applicable to their Industry.

Mr. S. SMITH, Paisley, seconding the vote, said that without sustained and continuous research their Industry would cease to exist on a competitive basis during the lifetime of many of them present. Of Dr. Smith and of the respect in which he was held among them he would like to say a closing word. Mention has been made of the great services he had rendered to the Industry, and of his service to the country as Director-General of Gas Supply; but one event would always remain in his memory, and that was the feeling of keen disappointment which was apparent throughout the Industry when it became known that Dr. Smith's resignation had taken place, for in those difficult years Dr. Smith gave them guidance and laid the foundation for the happy relations which existed to-day between the Industry and the Ministry of Fuel and Power.

Dr. Smith's Gift

The PRESIDENT stated that Dr. Smith was handing over his fee for the William Young Memorial Lecture to the Association's Benevolent Fund and thanked him for his generosity.

Thereafter Mr. D. L. DICKSON, Airdrie, delivered his Paper.

Luncheon

Luncheon followed in the Grosvenor Restaurant. Mr. TOM SCOLLAN, M.P., proposed "The County and City of Glasgow." Great developments, he said, were afoot in the North of Scotland, and these would benefit Glasgow.

The Lord Provost of Glasgow, Mr. JAMES WELSH, who replied, expressed the hope that the Gas Industry would develop in a constructive way and so help in the solution of many industrial problems. Atmospheric pollution was something they had to tackle. One of the first items in their post-war policy should be the creation of a smokeless city. Glasgow had had many difficulties and was now looking to the future. They proposed to deal with housing, and that would have a direct effect on the Gas Industry. If they wished to be proud of their city they must deal with housing adequately. Glasgow's destiny was bound up with a wider area, the Clydeside area, and they were hopeful that the Clyde Valley Planning Committee would lead to a better Glasgow, and a better Scotland. The Gas Industry could contribute to that result.

The Hon. J. KENNETH WEIR, C.B.E., proposing "The Gas Industry," said the Industry still had to receive the credit and the recognition due to it for its part in the national effort during the past six years. Without coal distillation products and derivatives the country could not have waged war successfully. The Gas Industry treated coal, and rightly regarded it as a material from which was derived a vast series of valuable products. A stage had been reached in their national history when they could not continue to waste coal. The Industry had a vital part to play in the national economy, and he was confident it would meet the demands made on it in peace as in war.

Colonel C. M. CROFT, D.L., J.P., responding, said that Mr. Weir had paid them a great compliment by referring to what they had done both in peace and war. Coal, their raw product, was scarcer and worse. They took it and used it with great efficiency. They were out to serve the public as long as they were able, and that would be for a long time to come.

Mr. T. S. LOCKHART, Rothesay, proposed "The Guests," Provost W. B. GIBSON, Johnstone, replying, and Mr. D. FULTON, Helensburgh, proposed the health of the President.

Election of Officers

It was intimated that Mr. Harold S. Milne, Aberdeen, had been elected Junior Vice-President, and that Messrs. F. R. Mitchell, Lanarkshire County Council, and S. Smith, Paisley, had been elected to fill two vacancies on the Council.

Mr. R. FIFE, Kilmarnock, as Immediate Past-President, presented Mr. A. Jamieson with the President's Memento, referring appreciatively to his splendid work in the chair, to his desire to serve the Industry, and to the spirit of good fellowship that characterized him.

The PRESIDENT, accepting the memento, paid tribute to the Secretary and the members of Council for their unfailing support. Their new President was Mr. T. S. Lockhart, of Rothesay. He congratulated Mr. Lockhart on his election, and invested him with his chain of office.

Mr. LOCKHART returned thanks for his election, and intimated that the Directors of the Coatbridge Gas Company had invited the members to hold their Spring Meeting at Coatbridge next year.

Provost MCKAY, Rothesay, extended an invitation from his Town Council to the Association to hold its Autumn Meeting at Rothesay; and an omnibus vote of thanks, proposed by Mr. R. KEILLOR, Greenock, concluded the proceedings.

Members of the Gas Managers' Golf Circle held a Victory Sweepstake over Hilton Park Golf Course, Glasgow, on Sept. 6, with the following result:

1st prize	. M. Watt, Leeds	. .	79 less 6 = 73
2nd ,,	. J. Brock, Glasgow	.	74 scr. = 74
3rd ,,	. D. Hamilton, Glasgow	.	92 less 16 = 76
4th ,,	. J. W. Watson, Glasgow		97 less 20 = 77

The name of New Geysers (1931) Ltd. has been changed to Barralets, Ltd. This is a change in name only, the management remaining unchanged. The Company has planned for a considerably wider range of gas water heaters. The Offices and Works will remain at 24, 25, and 27, Addington Square, London, S.E. 5. 'Phone RODney 2696–7.

A Gas-Works Investigation of the Manufacture of Coke-Breeze Ovoid Briquettes*

By B. W. JOHNSON, A.M.I.Mech.E.,
Chief Chemist and Technical Assistant, St. Helens Gas Department

THE manufacture of coal types of briquettes of various shapes and sizes has been a common feature of patent fuel manufacturing concerns since before the days of the war of 1914–18. This industry is flourishing in England, and was to a greater extent flourishing on the Continent prior to the war just ended. How the war has affected the Continental position is uncertain, but it should be restored.

The chief use of this type of fuel has been on the domestic side, but in recent years considerable other fields have opened, probably the most recent experiment being the use of block briquettes of the coal type on the locomotives of this country during the past war. The raw materials used in the manufacture of these briquettes have chiefly been coal in a pulverized form and a small quantity of pitch as a binding agent. Quite recently low grade slacks and even colliery washery slurry, which contains a high percentage of moisture, have been briquetted with considerable success.

Breeze.

The advent of coke screening and grading in the Gas Industry brought in its wake the problem of increased coke breeze disposal. The market for this product has always been sluggish and a source of trouble to the Industry. Throughout this Paper I refer to coke breeze below ⅜ or ¼ in. down to and including dust. This material in general represents about 6–7% of the total coal carbonized in the Industry.

The uses and experiments dealing with the disposal of coke breeze have in the past been numerous, the most notable and reasonably successful being:

(1) Its use as boiler fuel on the Lancashire type of boiler fitted with forced draught furnaces,—*e.g.*, Wiltons, Meldrums, Turbine Furnace, &c., and—

(2) Sandwich burning on mechanical stokers together with slack or coal in power station boiler houses and the like.

The use of coke breeze on carbonizing plant producers (breeze burning or pressure producers) is definitely not a success. In my opinion this term breeze burning as applied to carbonizing plants is a misnomer. Pressure producers, Yes, but not breeze burning. This material is not suitable for producers on its own unless a special type of producer is designed to deal with this type and size of fuel.

Revenue from the sale of coke breeze during wartime probably varied on the average from 10s. to 25s. per ton at works. This can scarcely be said to be a profitable venture when compared with the price obtainable for coke—say 52s. to 55s. per ton at works and with the respective calorific values being very little different. The more the breeze question is studied the more apparent is the need for some means of preparing breeze for combustion in a different form than has hereto existed generally.

At St. Helens several years ago a method of binding the fine breeze into a more suitable and sizeable form was required, a method whereby breeze could be burnt without the attendant troubles of unburnt material in considerable quantities being carried into the flues and up the chimneys of boiler plants, and thus bring about the more efficient burning of breeze without undue waste and trouble. The only solution to the problem appeared to be the briquetting of breeze with pitch as a binding agent into briquettes of a suitable size and form to suit all general purposes.

This process was experimental, and was carried out in conjunction with the firm of Yeadons, of Leeds.

Immediately prior to the war, we at St. Helens felt that it would be to our own and in the national interest to install a plant for briquetting our coke breeze. The possibilities offered by a venture of this description appeared to be numerous and attractive, and the time was opportune. Undoubtedly during wartime fuels would be in short supply, and patent fuels manufactured from the lower grade materials would come into their own and assist the war effort.

While the manufacture of briquettes on several gas-works had been attempted previously with varying success, the importance of solving such problems as were outstanding to achieve success was a matter vital to the country, the Gas Industry, and to the St. Helens gas undertaking in particular.

Obviously, if a good briquette in all respects could be produced from this by-product, the final effect on the balance-sheet could be of no mean order.

The probability was that during the war the value of fuels would rise, and the value of manufactured fuels such as briquettes would rise vastly more than coal or coke as compared with the pre-war prices of the respective fuels. It was felt that some of the difficulties experienced with earlier plants might be overcome by paying attention to design—as, for example, to reduce maintenance costs by choosing the correct materials for resisting erosion of such parts of the plant as the press rolls, grinding mill, elevators, &c. Enquiries were made and actual tests carried out by the briquette plant manufacturing firm of Messrs. Yeadons for material (breeze and pitch) produced at St. Helens Gas-Works. The resultant briquettes produced from the test were put to a number of practical uses, and from both the domestic and the industrial point of view appeared to be satisfactory.

The briquettes produced took the form of an ovoid approximately the size of a hen's egg and about 1 oz. in weight. This type of briquette was much preferred as regards size to the well-known 5 in. by 4½ in. by 2¼ in. rectangular coal slack briquette.

The surface area of the rectangular coal slack briquette is about 80 sq.in. and its weight 2¼ lb.; the corresponding figures for the coke-breeze ovoid are 7 sq.in. and 1 oz., therefore, weight for weight the ovoids have a surface area of nearly three and a half times that of the rectangular coal briquette. This was distinctly advantageous and necessary, as the combustion of breeze is far more difficult than that of coal slack.

We were thus presented with a favourable opportunity for important investigation with the minimum risk of excessive cost, and no doubt the wartime market would allow the investigation to be conducted with some probability of a profit, no possibility of undue loss, and the further possibility of being in a position at the end of the war through the experience gained and any improvements introduced to compete in post-war markets. Plans were therefore prepared for an ovoid type of briquette plant with Messrs. Yeadons.

Description of Plant.

The whole of the plant was supplied and installed in 1941 at a cost of £1,280. The site chosen was adjacent to the tar plant in a building once used for an anthracene process and a pump house. The building itself measured 50 ft. by 20 ft. by 15 ft. high to the eaves, with a louvre jack roof which was to provide good ventilation for the steam from the briquetting process.

The plant in processing order consisted of:

Breeze receiving hopper with feeder gear outside the building, to which breeze is brought by motor lorry from the coke screening plant.

"Ley" chain and bucket elevator which elevates the breeze to a metal shute feeding—

The breeze proportioning gear, above which is superimposed—

The pitch breaking and proportioning gear, which feeds the small pitch into the breeze in the correct amount for briquetting. Both proportioning devices are of the worm type, consisting of adjustable blades on a rotating shaft.

The breeze-pitch mixture is then fed into the grinding and mixing mill, which is of the mortar mill type, overhead driven and has two floors. The inner ring of the top floor of the pan consists of renewable grinding plates upon which the rollers travel for grinding and mixing the material, after which the mixture is diverted to the outside ring of the top floor, which consists of slotted grids, the slots being ⅛ in. wide by 3 in. long.

The ground mixture passes through these grids to the bottom floor of the pan which acts as a receiver and feeder; the mixture is swept out by rotating arms into a shute which feeds—

A second "Ley" chain and bucket elevator feeding the mixture to—

The vertical heater, a cylinder vessel with a number of rotating arms driven from a central shaft. Steam is admitted at two points at the base of the heater and the heated mixture discharged through a side bottom adjustable door. The heater is fitted with an indicator to avoid over-filling. From the heater the plastic mixture is fed by gravity to—

A circular receiver or pug mill with rotating arms which keeps the mixture moving and feeds it through a shute to—

The briquette press rolls. These are two solid wheels travelling in opposite directions; the half moulds on one wheel coincide at the point of contact with the adjacent half moulds on the other wheel. Hence when the plastic mixture is fed down to these rolls the full ovoid briquette is pressed out and drops on to a band conveyor delivering either to storage, bag, or wheeled vehicle.

* From a Paper to the Manchester and District Junior Gas Association.

In the St. Helens case the band conveyor delivers the briquette on to a small belt elevator which delivers direct to railway wagon.

The individual moving portions of the plant—*i.e.*, elevators, proportioning gears, pitch breaker, grinding mill, heater and pug mill arms, mould press rolls, and final band conveyor—run at speeds which have been synchronized so that the flow of material through the plant is continuous. All the individual portions are belt driven through fast and loose pulleys from a common line shaft and 20 h.p. electric motor.

Manufacture of the Pitch-Breeze Ovoids.

The following notes apply to the last two years only.

The plant was designed to produce one ton of briquettes per hour. Actually this figure has never been reached, the maximum being 18 cwt. The causes relating to this failure to reach design capacity can be attributed to one or more of the following:

1. Inexperience in the manufacture of briquettes of any type.
2. Wartime labour available.
3. The raw materials—pitch, breeze, steam.
4. The wear and tear on the plant.

Taking the above points in order:

1. This is a case in which time is the essential factor—time to gain the experience needed to produce a good product. This, of course, takes into account the other points.
2. This is more or less a case of being fortunate enough in wartime to obtain the type of labour desired.
3. The quality of the raw materials has a considerable bearing on the finished product.

The *pitch* should be neither too soft nor yet too hard. Too soft a pitch will probably produce difficulties in grinding, and too hard a pitch will produce difficulties in the vertical heater. The pitch used at St. Helens is produced on the works, and has an average melting point of 75° K. & M. and ash content under 1%.

The *breeze* should be reasonably dry, particularly when a grinding mill of the type used at St. Helens is incorporated in the plant (slotted grids after grinding). The size of the breeze is also important. Breeze from $\frac{3}{4}$ in. down is quite reasonable material for the plant to handle; beyond this size extra wear and tear is introduced, production is slowed up, and the texture of the finished briquette is considerably altered.

The *steam* should be dry, superheated if possible. Considerable trouble was experienced at St. Helens due to wet steam, the plant being situated at the end of a very long steam line. This trouble was overcome by installing a small gas-fired superheater in the steam line immediately prior to entering the vertical steam heater. Wet steam has a considerable effect on the binding of the pitch and breeze as well as impairing the combustible properties of the briquettes.

The wear and tear on a plant using such abrasive material is naturally heavy. When first investigating difficulties, which were becoming very numerous, the major proportion were found to be due to wear and tear on the plant in general. The chief portions of the plant affected were the plates and the rollers in the grinding mill, the blades of the proportioning gear, heater revolving arms, pugmill bottom plates and arms, and to a lesser extent the elevator buckets and chain, the press rolls, and certain gear wheels.

Probably the worst feature of the above was the heater arms, which were discovered to be so worn that a hardened layer of the material up to $\frac{3}{4}$ in. thick was found on the shell of the heater. This continually stopped the plant, and the hardened layer had to be removed before proceeding with production.

The ultimate outcome of all these troubles was the complete overhaul of the whole plant. All worn parts were renewed or built up in the works shop by electric welding. In the case of the heater arms, &c., a much harder metal (Duroid) has been used for building them up, and this has considerably lengthened their life. Certain gear wheels have also been built up in a similar manner.

Method of Working the Plant.

First and foremost the proportions of pitch and breeze must be correct; this can only be found by experience, and depends upon the size of breeze being used. Excess of pitch will cause sticking in the heater, pugmill, and press rolls. If too little pitch is used, the mixture will not bind and the briquettes will disintegrate on handling. Our average pitch content is 12%. The breeze should be reasonably dry to avoid stopping-up the grid slots in the grinding mill.

Steam should be preferably superheated. The two press rolls should be properly aligned and as near together as possible, so that the briquette is properly formed and flaking at the sides is reduced to a minimum. When the plant is working the heater should be maintained about three parts full, so that a constant supply of material at even temperature is ready for the pugmill, which also should be worked about three parts full to ensure a constant feed to the press rolls.

Insufficient feed to the press rolls is the cause of badly formed briquettes. Sufficient steam should be admitted to ensure plasticity of the mixture, and it is also important that the finished briquettes should be allowed to harden up by cooling before they are subjected to further mechanical handling.

Additions and Alterations to the Plant

With the experience gained various alterations and additions were made to the plant by the Gas Department with a view to improving the working and to reducing the costs.

Additions.

1. Superheater on steam line.
2. Wire screen chute at the end of the final fixed elevator. This serves the purpose of screening out the flaking which breaks away from the edge of the briquettes.
3. Belt elevator for loading the briquettes direct into railway wagons, thus avoiding the two operations of wheeling to storage and loading into wagons by a mechanical shovel or other means.
4. Covered storage for the incoming breeze.

Alterations.

1. Superimposing the pitch breaker on the proportioning gear, this greatly reducing the handling of the pitch. (The breaker was previously about 10 ft. away from the proportioning gear.)
2. Lagging the vertical heater.
3. Covering the top of the vertical heater.

The Briquettes.

The quality of the briquettes varies according to the quality of the coal carbonized. Analyses to date have varied between the following figures:

Moisture	3–5%
Ash	12–17%
Volatile matter	12–14%
Calorific value	12,000 B.Th.U./lb. approx.

Domestic Use.

The majority of the briquettes that have been made have been sold chiefly for domestic use. One cannot say that they are an ideal domestic fuel on their own. Difficulties are experienced in starting a fire composed of all briquettes even with the aid of a gas poker. With their rather high ash content and their density the briquettes are slow burning with the natural draught domestic fire. This low combustion rate is further retarded by the layer of ash which is formed on the surface of the briquette, and which is only removed by forced draught or mechanical means. If the fire has been started with coal or coke or if mixed with coal or coke in about equal proportion they make quite a reasonable fire.

Industrial Uses.

The experiments carried out at St. Helens from the industrial point of view have been a definite success. On the forced draught Lancashire boiler the briquettes burn well; the layer of ash that tends to form on the briquette is disturbed by the forced draught and firing. A mixture of coal and briquettes in equal proportions has been found quite successful on the works locomotives. By increasing the width of the grid slot in the grinding mill it is expected that the porosity of the briquette will be increased, thus making the product easier burning from the domestic point of view.

Factories Act

With the growth of the briquetting industry a special Government Order No. S.R. & O. 1944—No. 521, the Patent Fuel Manufacture (Health and Welfare) Order, was issued. This Order covers the adequate fencing of the exposed machinery, the enclosing of portions of the plant likely to emit pitch dust, the provision of baths, clothes lockers, and a suitable barrier cream and goggles for the operators. At St. Helens a considerable amount of machinery fencing has been done, and portions of the plant likely to emit pitch dust have been enclosed.

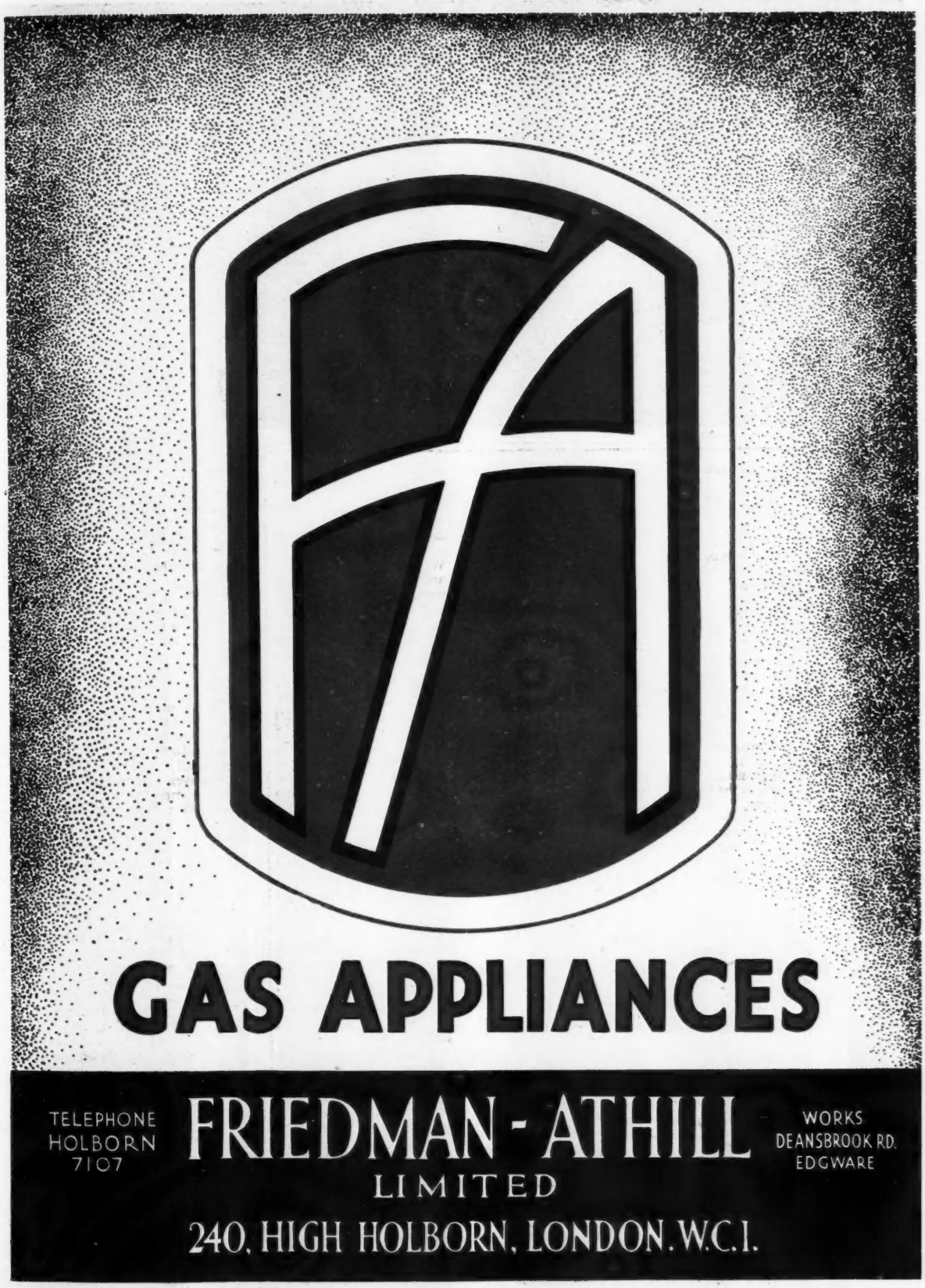
The type of grinding mill does not lend itself to enclosure, and from this viewpoint the totally enclosed disintegrator type of mill would be preferable. The plant is remarkably free from pitch dust, and ample ventilation is provided in the louvre roof for the waste steam from the heater.

Steel clothing lockers were provided for the operators; shower baths already existed on the works for general use. The operators were also provided with goggles, an antiseptic cleansing jelly and a first-class barrier cream (Esoban).

To complete the directions of the Order arrangements were made for a medical examination of the operators every six months.

Market

The demand for the briquettes by several merchants has been so insistent that it would have been possible to sell at least eight to ten times the potential plant production. Therefore, the whole production after the first year's working has been sold to merchants and has been rationed out between them, any one of whom would have taken the whole. During the first year a proportion of the briquettes was burnt very successfully on the Lancashire boilers admixed with coke breeze of coarser grading, during which period all trouble with unburnt dust in the boiler flues was avoided. At the time this was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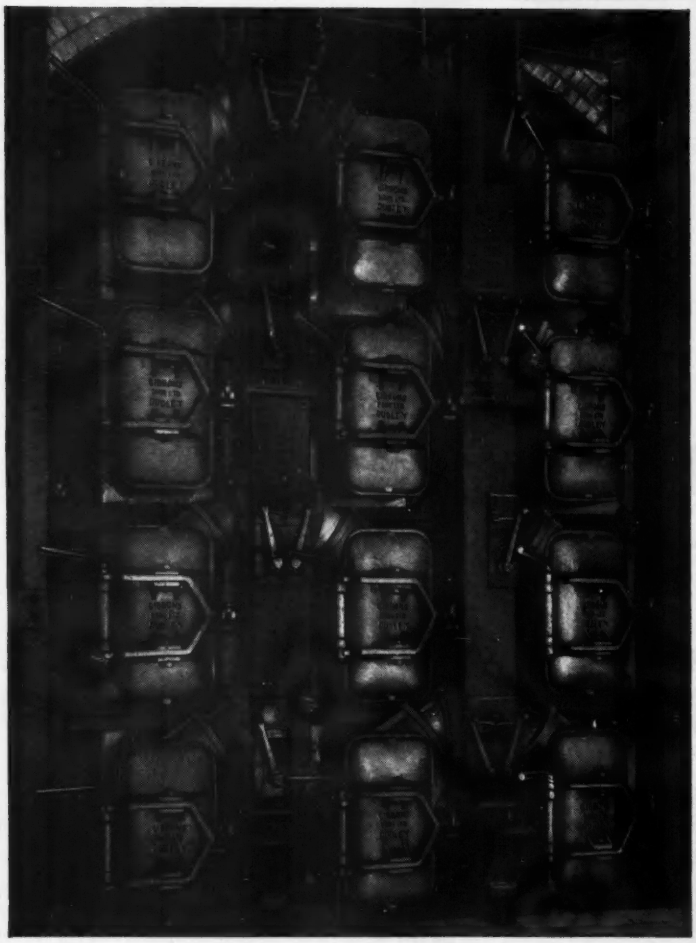

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particularly important, because the boiler plant was over-loaded and the process saw us through a difficult period.

As to the future market, time alone will show. If it continues as at present we are confident of satisfactory results. If on the other hand the briquette market depreciates, we shall still consider the experience gained well worth while and of potential value. For future manufacture one of the most important points would be to install plants of very large output compared with labour for operation. Probably the same labour could operate a plant many times the capacity of the St. Helens plant.

PRODUCTION COSTS.

1. *Value of Breeze to Process.*

The fine breeze in question has gradually increased in value during the war, and a large proportion of that manufactured at St. Helens is saleable at 25s. per ton f.o.r. gas-works. Nevertheless, a surplus of breeze still is and always has been unsaleable unless processed. If this is not processed it has to be carted to tip, or alternatively costs are incurred putting it to stock, and eventually further costs incurred in picking it up from stock if it is sold.

Bearing these considerations in mind, it is considered fair to charge such surplus breeze to the briquette plant at 15s. per ton.

2. *Value of Pitch to the Plant.*

The pitch dust and smalls is principally used for briquetting from the pitch bays. This is normally unsaleable. Nevertheless, in the costs below pitch is valued at to-day's selling price—*i.e.*, 53s. per ton.

BALANCE-SHEET.

15 weeks' run with a production of 426 tons.

	Cost per ton Briquettes.
Breeze	13s. 2d.
Pitch	6s. 6d.
Operators' wages	6s. 10d.
Maintenance (labour and material)	4s. 1d.
Haulage	10d.
Steam, gas, and electricity	1s. 6d.
Capital charges	2s. 9d.
Total cost of manufacture	35s. 8d. per ton.
Selling price	53s. 9d. „
Difference	18s. 1d. „

Since 1941 the selling price has gone up from 30s. to the present price of 53s. 9d. per ton f.o.r. gas-works.

Recent Experiments.

As the rolls gradually wear, the size of the briquette produced gradually decreases. We are now testing out rolls designed to make a large briquette—*i.e.*, 2½ oz. This will give increased production, because the remainder of the plant is considered equal to the increased requirements of the rolls.

We are also testing out larger grids after grinding, because we believe this will increase the throughput from the grinding section, reduce clogging of the grids, and probably increase the porosity of the larger briquettes. We are not concerned as to the slight increase in size of the ground particles of material, because the larger briquette should accommodate this factor.

If these latest experiments are successful production costs will still further be reduced, as the same labour is capable of a much larger output, the plant and practically all handling being mechanical.

DISCUSSION

The **President** (Mr. D. Benson, Bolton) said that, in his opinion, an increase of porosity would appreciably enhance the combustibility of briquettes, particularly on the domestic fire. Some of the original coke structure would be retained. Because of the ground material of the briquette there was merely surface combustion, which, again, was retarded by the formation of ash on the surface, and it was desirable to have combustion taking place inside the briquette to increase burning properties. The fuel position was not likely to be eased in the immediate future, and it would be practicable commercially to install a briquetting plant, the capital cost of which could be recouped within a year or a couple of years' time.

Mr. **Johnson** agreed that there should be porosity. It was hoped to effect this and make the briquette more suitable, at any rate for domestic use.

Mr. **R. S. Longhurst** (Rochdale) asked whether the Author could give the steam pressure, the degree of superheat, and the quantity of steam used per ton of briquettes made. The briquettes did not appear to be too satisfactory for the usual domestic grate. Had a coke grate been tried, and what tests had been carried out on the combustibility or ignitability of the material? Would the C.A.B. test afford any comparison with standard fuels? It was stated that the briquettes burned very well on a Lancashire boiler with forced draught to disturb the ash which tended to blind the combustible material. Surely this ash would be carried forward into the flues, which was something to be avoided. Another important point was the cost of the fuel to the boilers, the briquettes being 35s. per ton at cost price against 15s. per ton for breeze. In regard to increasing the porosity of the briquettes, could the Author suggest any material or chemical additions in order to increase their reactivity?

Mr. **Johnson,** referring to pressures in the steam heaters, said that the steam was admitted at about 60 lb. per sq. in. The amount used was very small, approximately 200 lb. per ton per hour. He could not state any definite temperatures for the superheater. At St. Helens they used a tiny gas-fired superheater which served the purpose quite well. In regard to domestic use he had only had experience of using the briquettes on the ordinary coal grate, and they were reasonably satisfactory. No experiments had been made on a chemical reaction with respect to the ash, and there had only been a short experience of the 35s. cost on Lancashire boilers; in fact, the matter could be regarded as being in an experimental stage.

Trend of Demand

Mr. **J. C. Hogg** (Stretford) asked whether it was anticipated that the demand for briquettes would be lessened. The coal industry was now using a considerably greater number of machines for getting the coal, and as a result they would be confronted with a problem of an increasing percentage of coal fines. Therefore the collieries, too, would be looking round for some method of disposing of the material, which could be regarded as a drug upon the market from their point of view as well as of that of the Gas Industry. Experience during the war had proved that many people could accommodate themselves to such material, as it had a high calorific value compared with its price and it could be used economically. Their electrical friends had awakened to the possibility of using it economically. The St. Helens Undertaking was fortunate in being able to realize a price of 35s. per ton.

If the porosity of the briquettes could be increased, it might be possible to hold the domestic market. To what extent did the pitch penetrate the coal structure in the heating? Did it seal off, or did it bind the particles together? It was to be assumed that complete sealing would have a somewhat deleterious effect upon combustion characteristics. While briquettes were considered, it should be borne in mind that the main object was not so much to find a market for the breeze as to keep it down in production to the greatest possible extent. He assumed that 53s. 9d. was the selling price at the works; it would be interesting to learn the cost of factorage. Why did not St. Helens distribute the briquettes themselves with the normal coke sales, as the weight of briquettes was not considerable?

Mr. **Johnson** replied that the market for briquettes in the post-war period was a matter to be ascertained. He agreed that coal briquettes were on the increase, even in the case of colliery washery slurry. Perhaps in the balance-sheet the breeze had been put down at a rather excessive cost of 15s. per ton. A larger plant would definitely reduce the production cost, because a plant with a capacity of 10 tons per hour would only require the same amount of labour as one producing one ton per hour. Dealing with the point of pitch penetration, the two materials were ground together to particles of approximately one-sixteenth inch to dust, so that there was fairly intimate mixing technically and a dense briquette was manufactured. In regard to factorage, the briquettes were available for local sale, but as yet there had not been any great demand for them. The haulage question was bound up with that of coke distribution, as was also the sending out of the briquettes by rail.

The Smoke Aspect

Mr. **F. Bell** (Liverpool) asked whether it would be wise to sell a fuel with a volatile content of 12 to 14% when the bulk of the normal products of the Industry was smokeless fuel. He had examined similar briquettes to those described by the Author, and ash formed on the outside of them, causing a most unsatisfactory appearance in the fire. He did not think he would buy a briquette of that type if he had freedom of choice. It did not seem to be a wise procedure, therefore, to sell such briquettes for the domestic market. On the point of porosity, the use of coke breeze without grinding would assist ignitability, because if the speed of combustion of the outside surface could be increased, it would materially hasten the combustion of the whole. Experiments had demonstrated that if the outside temperature was in the region of 900°C. then it did not matter very much about the rest of the structure. If ⅛-in. particles could be dotted about, they would burn more easily and assist combustibility generally.

Mr. **Johnson** said that the whole object of the increased size of the grid was to increase porosity. In his opinion the briquette would be a good product from the industrial point of view, though not entirely suitable for domestic use. It had been a wartime venture, and how the market would go later on could not be stated. At St. Helens, however, the venture had certainly been worth while for the Lancashire boiler firing, particularly after the installation of larger plants.

Specialized Markets

Mr. **F. Hodkinson** (U.K.) thought that the Paper would prove of considerable value in assisting gas undertakings to solve a problem which, in his opinion, would become more urgent. Mr. Hogg had suggested that breeze would become practically a drug on the market, in that the coal people were going to develop the production of briquettes and cut down the markets available to gas undertakings as producers of solid fuel. He was not in entire agreement with Mr. Hogg on that point. The probability was that later on there would be a great deal of processing of the coal produced, and the Gas Industry would be asked to produce a fuel which was suitable for the domestic grate. If such should be the position they would be faced with the prospect of producing a graded fuel for the domestic consumer which would probably be 1 in. or 2 in. size. This involved the production of breeze. As a matter of fact, breeze was going to remain for a long time, and the problem required to be solved. He believed that it was possible to produce a briquette which could be sold in specialized markets, perhaps not for the domestic grate but for the slow combustion stove. It should be possible to develop a washing process for the pre-treatment of breeze, followed by the production of a briquette which should have a ready and valuable market for certain purposes. Had the St. Helens management considered the washing of breeze for the production of a low ash fuel? The coal people were doing it with certain of their dust products, as they had full confidence in a briquette market.

Mr. **Johnson** replied that he had not considered the washing of breeze.

Breeze Washing

Mr. **W. P. Smith** (Rochdale) said that briquettes made with a cement mixture were doing the market a great deal of harm, and people were complaining of their dirtiness. On the other hand, one large anthracite colliery was actually grinding up its coal to make coal-pitch briquettes, which indicated a definite market for clean briquetted fuels. He had some doubts concerning the washing of the breeze. He understood that the moisture content of the mixture entering the mill was a matter of supreme importance, and there had been some discussion whether breeze *ex* stock was suitable for the process. At Rochdale they had come to the conclusion that it was not, as the position was complicated by the difficulty of screening small fuel of relatively high moisture content.

He did not know whether anyone was receiving 25s. per ton for ¾ in. down; the usual figure at the gas-works solid-fuel boiler was about 5s., which was very different. He assumed that the 25s. did refer to ¾ in. down and not to general breeze, because this would make all the difference.

While pitch-breeze briquettes might not be an ideal fuel for the domestic grate, being rather more difficult to ignite than coke, he could not understand why they should not be able to use them comfortably and satisfactorily on the domestic grate having bottom bars and a reasonable draught. He thought that if a little more advertising was done on the correct method of using coke, more would be sold.

What was the top limit for moisture in the breeze before it went into the plant? When briquettes were made under pressure, the moisture content was a critical point. Again, was the amount of pitch in the pitch-breeze mixture tested periodically and was it found to vary appreciably? Further, was there a record of the temperature in the pug mill, and what was the approximate temperature?

Mr. **Johnson** had no information to impart on cement briquettes. Actually a good-quality coal was being used for coal briquettes—*i.e.*, a good quality slack. Of course, finely-ground coal briquettes had a skin on them which breeze briquettes did not possess. The skin finish was produced by the press and the type of material used. If the moisture content was above 10% there would be trouble. The washing of breeze would introduce difficulties, apart from introducing another labour factor. There was about 12% of pitch in the mixture, but it would vary according to the degree of fineness and the moisture. An increased size of plant would considerably reduce labour costs. He was in doubt respecting the heater temperature, because it was difficult to get inside the heater itself, due to the revolving arms. He had had figures varying from about 90°C. to 150°C.

Mr. **A. Ormrod** (Liverpool) asked about the medical aspect of the plant.

Mr. **Johnson** said there was a six-monthly examination of the operators, and the part of the plant which was likely to emit pitch dust was enclosed. The Order did not mention breeze-briquette dust, but there was a good barrier cream provided, together with a good cleansing jelly. There was very little pitch dust.

Mr. **H. R. Coates** (Oldham) asked whether the quality of the briquettes suffered at all by storage. He thought that the briquettes should be sold mainly for industrial use. People were willing to buy them at present for domestic use because they could not buy anything else.

Mr. **Johnson** said that the briquettes were not sold locally but to agents, and he did not know for what purpose they were used. The briquettes, if properly made, were not affected by storage.

Maintenance Costs

Mr. **E. B. Field** (Blackburn), referring to coke breeze, said that every undertaking seemed to have a different size for this product. Mr. Johnson had stated that breeze ¾ in.—0 in. was valued at 25s. per ton at St. Helens, which appeared to be a high figure. The use of breeze on Lancashire boilers was satisfactory where the steam-raising plant was of more than ample capacity, but during times of high demand, as during recent years, one had to supplement with coal and coke, and mixed fuels led to inefficient firing. It appeared that the breeze ovoid briquettes would be ideal for Lancashire boilers. The maintenance of the briquetting plant appeared to be rather alarming. Was it not possible to adopt special linings to the more important sections of the plant?

Mr. **Johnson** said that the breeze at 20s. to 25s. per ton was ½ in, to nothing and not ¾ in. to nothing. The maintenance cost was high. as could be expected when dealing with an abrasive material, but this difficulty had been surmounted to a great extent by building up with "Duroid" metal. Whether a different type of disintegrator would be of advantage in that respect he could not say, but he did think so—*i.e.*, an enclosed type of disintegrator as against the grinding mill. More trouble was caused through erosion than corrosion at St. Helens. Half an hour was allowed for greasing the plant and half an hour at the end of the day for cleaning.

Mr. **J.°C. Hogg** (Stretford) said that at Stretford they had been raising their make-up steam on Lancashire boilers, over and above waste heat, on ¾ in. down to dust. Provided the correct fuel rate was maintained and the boiler men had been instructed as to correct use, there should not be any great difficulty. At the present cost of breeze to the boiler, steam could be raised economically. It was all a question of the depth of fuel and the amount of draught available.

Mr. **Bradshaw** (St. Helens) asked why, if breeze was such a good steam-raiser, there were such large stocks of it?

The **President** thought that the best method of utilizing breeze was to burn it in a properly-designed furnace of the Wollaston type, with a firetube type boiler mounted on top.

On the motion of Mr. **E. Bates** (Manchester), seconded by Mr. A. **Ormrod** (Liverpool), a vote of thanks was accorded the Author.

The British Hard Coke Association has changed its title to the *British Coking Industry Association*. Address: 11–12, Pall Mall, S.W. 1. Telephone: Abbey 6772–4.

The Council of the Institution of Gas Engineers has decided to hold the 11th Autumn Research Meeting of the Institution in London on Tuesday and Wednesday, November 27 and 28.

The Quasi-Arc Company, Ltd., has issued Technical Circular No. T.C. 594 describing the properties and applications of Vortic electrodes for vertical and overhead welding of mild steel and high tensile structural steels to B.S. 968. The electrodes are in standard sizes of 4, 6, 8, 10, and 12 s.w.g., and in smaller sizes for downhand welding of heavy butts and gravity fillets.

The Fifth Series of Post-Graduate Lectures arranged by the Oil and Colour Chemists' Association will be entitled "Viscosity and Plasticity," by Professor E. N. da C. Andrade (Quain Professor of Physics, University of London), and will be held on Oct. 11, 18 and 25, at 6.30 p.m., in the Lecture Theatre of the Royal Institution, 21, Albemarle Street, W. 1. An inclusive charge of 10s. for the three lectures will be made to members and visitors. Applications for tickets, together with remittances, should be forwarded to Mr. D. E. Roe, Hon. Secretary (London Section), c/o Atlas Preservative Company, Ltd., Fraser Road, Erith, Kent.

Aberdeen Gas Committee has approved plans for extensions of gas mains to temporary housing sites at Hayton, Tillydrone, and Tullos, at a cost of £7,290. The Corporation has agreed to participate in the Kitchen Planning Exhibition which the National Gas Organizations in Scotland have arranged to be brought to Scotland. The exhibition will open in Edinburgh in October for one month.

Shortage of Labour and Materials has restricted public lighting at Leeds to about 50% of the total pre-war candle-power, and no steps are therefore being taken to effect any cuts as a result of the Ministry of Fuel and Power's fuel economy appeal. Discretion is to be used in the turning out at midnight of such lamps as are considered redundant between that time and the normal extinguishing time in the morning.

The Audited Accounts of Stephenson Clarke, Ltd., and of the companies in which it controls, directly or indirectly, 90% or more of the share capital (excluding a French subsidiary for which the 1944 accounts are not available), show that the consolidated profits applicable to the parent company and its holdings for the year ended March 31, after provision for depreciation and taxation other than income tax, but before deducting debenture interest and sinking fund on the first Debenture stock of Stephenson Clarke, Ltd., amount to £616,776. Two interim dividends, totalling 15%, have been paid on the Ordinary shares, and no further distribution on account of the year 1944–45 is proposed, leaving £186,757 to be carried forward. The name of the Company was changed from "Stephenson Clarke and Associated Companies, Ltd.," to Stephenson Clarke, Ltd., as from Jan. 8.

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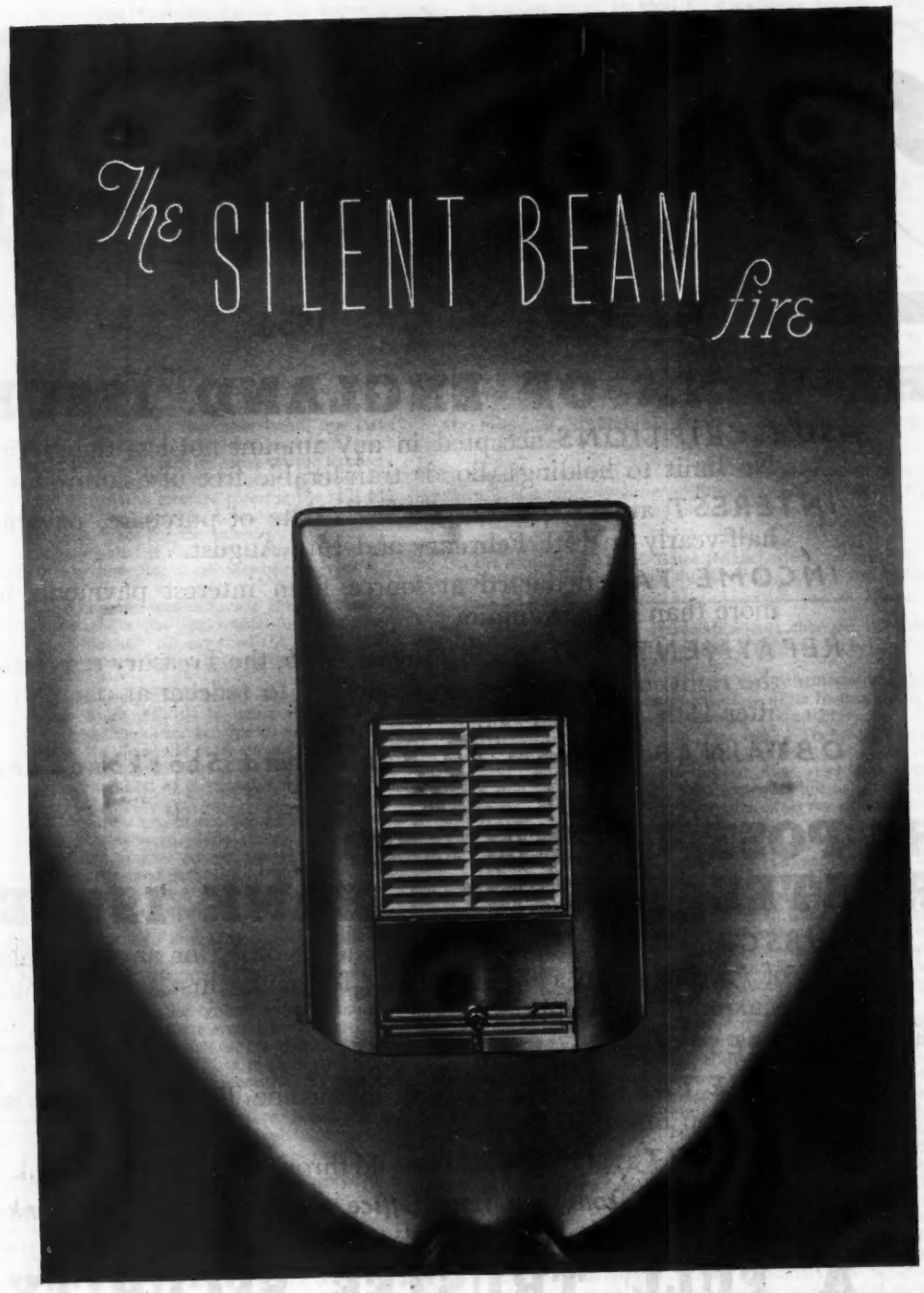
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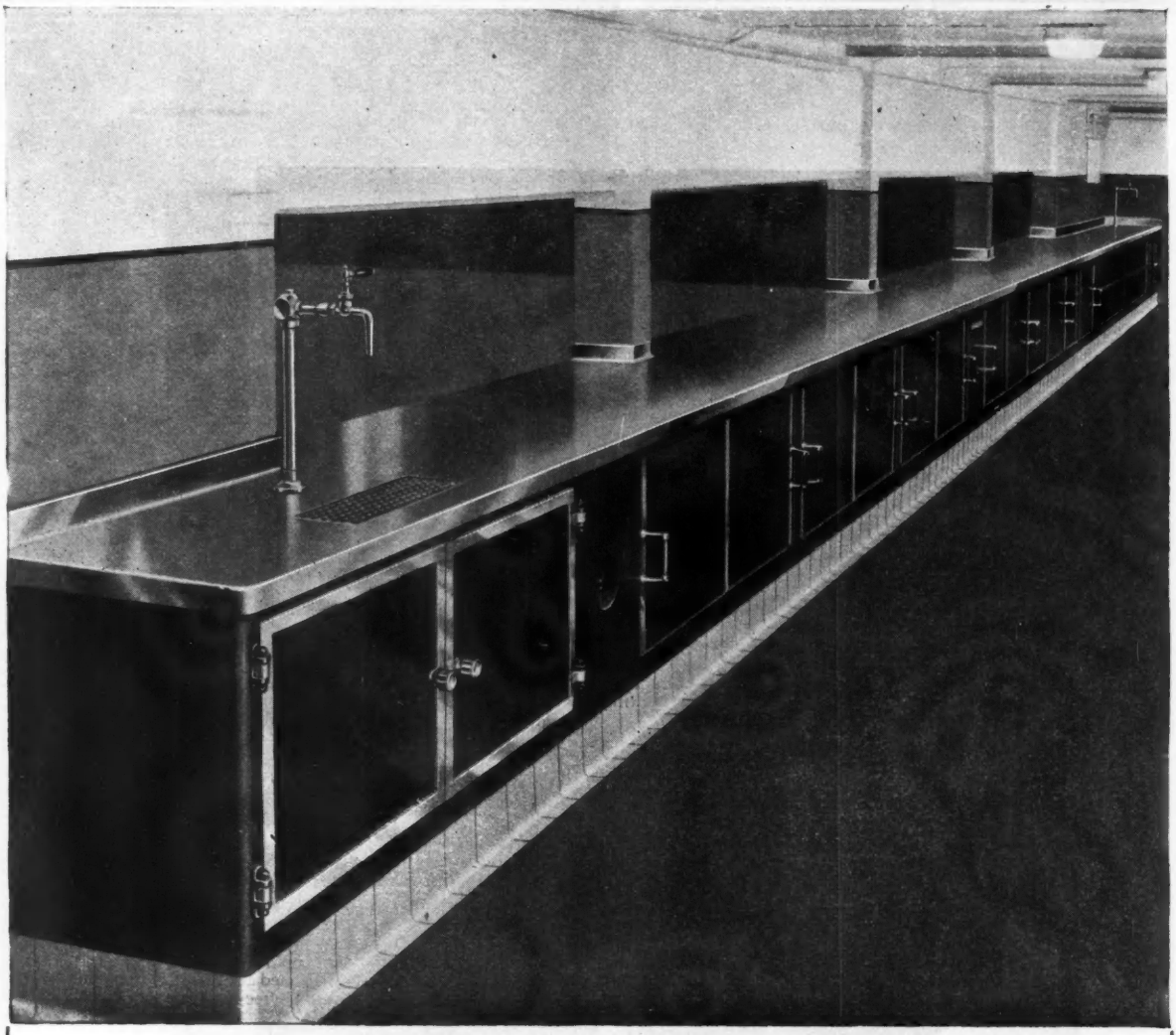

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Standardization of the Degree-Day*

By JOHN F. COLLINS

THE degree-day, since its introduction by the American Gas Association some years ago, has been a valuable yardstick to the entire heating industry, and is potentially of far greater usefulness. Designed originally to serve as a universal measurement of cold weather, various interpretations placed upon it and varied means of determining its value in different sections of the country have resulted in considerable confusion, that has somewhat defeated the original purpose of the unit measure and robbed the degree-day of part of its general usefulness.

Gas and steam utilities using the measure to predetermine load demands, coal and fuel oil producers to predetermine stockpiles and sales and heating engineers to compute annual heating costs and fuel storage found they were not all talking about the same values.

For example, a degree-day calculated on the basis of monthly mean temperature has not the same value as that computed on the daily mean temperature basis. Some persons and organizations compute the degree-day from average daily temperatures derived from hourly readings, that is, from—

$$\frac{t_1 + t_2 + t_3 \ldots . t_{23} + t_{24}}{24}$$

where t_1, t_2, &c., represent 24 instantaneous readings at hourly intervals within a calendar day. However, such official hourly readings are available to only a few regions of the country, as they are recorded at comparatively few weather bureau stations where there is sufficient personnel to do the added work. Test calculations have shown that the difference in results between the average and mean temperature basis is so negligible as to make the mean temperature basis, available from reports of 4,303 weather stations, most favourable.

Raymond Little, the A.G.A.'s representative on the Committee on Weather Statistics, reported that an enquiry to member companies showed their approval of the mean temperature basis for computing degree-days.

As a result, the committee has recommended use of the formula—

$$\frac{t_{max} + t_{min},}{2}$$

where t_{max} and t_{min} are respectively the instantaneous maximum and minimum temperatures for a station during a standard time calendar day at that station.

Because of the general need for national standardization of the degree-day, the National District Heating Association invited the various groups and industry associations allied with the heating industry to join in the formation of a committee to make a detailed study of the problem effecting such standardization.

Joining in rapid succession were the American Gas Association, the United States Weather Bureau, the American Society of Heating and Ventilating Engineers, the National Warm Air Heating Association, the Oil Heat Institute of America, Inc., the National Coal Association, and, of course, the National District Heating Association. The new National Joint Committee on Weather Statistics quickly went to work.

The problem was divided into three main divisions:

1. How to take temperature readings from which to derive degree-days.
2. How to compute both current and normal degree-days.
3. How to report and maintain degree-day data.

Of immeasurable assistance to the committee was Herbert C. S. Thom, Chief of the Statistics Division of the U.S. Weather Bureau, representing the bureau on the Committee in supplying much needed information on the weather stations in the United States and Alaska, together with pertinent weather data files. In all there are 4,303 weather stations, classified as first order, second order, and third order stations according to their importance, personnel, and instruments used.

Only 322 are first order stations. In these stations temperature observations are made simultaneously at 1.30 a.m., 7.30 a.m., 1.30 p.m., and 7.30 p.m., all Eastern Standard time, regardless of the time zone in which the stations are located.

The second order stations, numbering 112, may record observations at the same hours as the first order stations, or may record only at 7.30 a.m. and 7.30 p.m.

Third order stations number 3,869. These stations are manned by voluntary unpaid observers. They record morning and evening temperatures, suiting their own convenience, and report times and temperatures monthly.

All stations are equipped with exposed thermometers for observing temperatures and maximum-minimum thermometers for recording those extremes. First and second order stations are equipped with thermomographs (recording thermometers), but the latter are not recommended by the committee for establishing mean temperatures for degree-day computation because of the greater accuracy of the maximum-minimum thermometer.

Favour 65° F. Daily Mean

Mr. Little further reported that the consensus of gas utilities in all parts of the country favours the use of 65°F. as the mean daily temperature at which it becomes desirable to supply heat for space heating for normal occupancy. Such a day may be, for example, one with a daytime maximum temperature of 70°F. and a night time minimum temperature of 60°F.

The Committee therefore decided that the present base temperatures for degree-day computation of 65°F. is entirely satisfactory for the entire country for normal occupancy, and that degree-days on other bases for special occupancy should be marked so as to indicate, for example—

$$28 \text{ d.-d.}_{70^\circ \text{ F.}} \text{ or } 5{,}260 \text{ d.-d.}_{60^\circ}.$$

Current degree-days for any day, for use where there is normal occupancy, should be computed by subtracting the daily mean temperature from 65°F.

Method of Computing Daily Degree-Days

It seemed to the Committee quite logical to carry out practically the same process in computing normal degree-days as is to be done in figuring current degree-days for the week, the month, the billing period or the year where the simple computation is to add degree-days for the days in the period under consideration. The process by which normal degree-days often have been figured in the past has been more complex and less logical. It was agreed first to decide on a method of computing the normal unadjusted degree-days for a single day, such as for Jan. 5. By addition the normal, unadjusted degree-days for each month and the yearly total can be accumulated. Plotting the normal unadjusted daily degree-days will produce a curve not entirely smooth.

This is illogical, since a normal heating season would become continually colder until mid-winter and then continually warmer. Daily, normal degree-days should be adjusted up or down as needed to make a smooth curve while maintaining the monthly totals.

20-Year Record Provides Accurate Base

On the basis of Mr. Thom's study of seven key cities—namely, Boston, Mass., and Charleston, S.C., on the east coast; Mobile, Ala., in the south; Des Moines, Ia., in the north central district; Denver, Colo., and Salt Lake City, Utah, in the mountain district; and Tacoma on the West Coast, he recommended 20 years as the longest period necessary to determine normal degree-days which would not vary greatly.

The following figures are for a mid-winter day at Des Moines, Ia., which showed greater variation than the other cities:

Years.	D.-D.	Years.	D.-D.
4	42.08	28	41.8
8	38.5	32	41.7
12	39.1	36	42.1
16	41.3	40	41.6
20	42.0	44	41.6
24	42.1	53	41.9

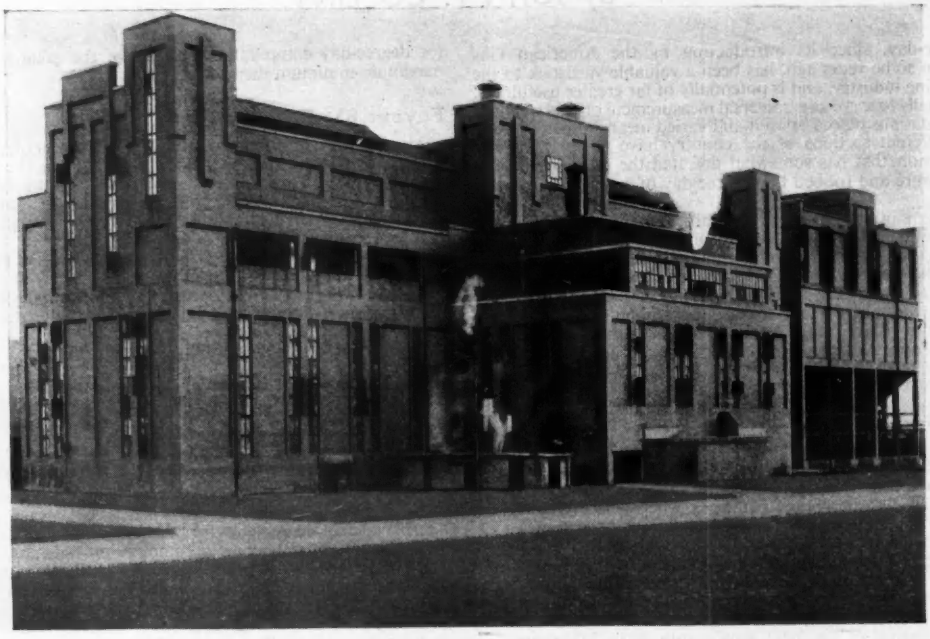
It is therefore evident that a normal based on the past 20-year record can be considered sufficiently accurate for practical purposes. Thus the Committee decided the normal daily degree-days for any day of the year for any location shall be computed (1) by adding the current daily degree-days for that day for a 20-year period and dividing by 20, and (2) by adjusting as required to produce a smooth curve of the normal degree-days for the month in which the day occurs, while maintaining the same monthly total degree-days both before and after adjusting.

In every four years (except at the end of certain centuries) there are three regular years and one leap year. In each leap year, February has more degree-days than in regular years, and March and each remaining month of that heating season has correspondingly less. The yearly total is not affected.

Estimates Added to Known Figures

For stations at which the maximum-minimum thermometer has not been (1) in place for 20 years, or (2) has not been at the same location for 20 years, normal daily degree-days will be figured by adding to the known figures estimates for days in years for which there are no records. Such estimates will be eliminated periodically as the figures for additional years are available. By using a 20-year record as a basis, it is known that normal degree-days for weather stations need not be revised for climatological reasons except at long intervals.

* From *Gas Age*, May 31, 1945.



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COMMUNICATION No. 230—PROCEEDINGS OF THE INSTITUTION OF GAS ENGINEERS 1939-40, p. 455.

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The U.S. Weather Bureau will make revisions to normal daily degree-days to eliminate estimates, or to correct for changes only at stated intervals to be agreed to at some later time.

Hope Canada Adopts Same Procedure

It was agreed that normal daily degree-days would be included in the records to be printed for days in all 12 months if, when computed and adjusted in the way agreed upon, such degree-days are to be found. In the very cold localities there may be degree-days all summer. Organizations wishing to cut off degree-days at the start and end of the heating season can simply take normal degree-days for any period they wish—for example, nine months. The needed data will be found in copies of the *Weather Bureau Monthly Statistics for Weather Stations*, either at the weather station to which the degree-days apply or at the U.S. Weather Bureau in Washington.

It is hoped that arrangements can be made to have Canadian records set up in a way paralleling the recommendations for the United States.

Weather Bureau Plans for Data

Continued work of the Committee on Weather Statistics is progressing as well as can be expected in view of personnnel shortage, particularly in the weather bureau, which, as might be expected, has had tremendous responsibility and activities in connexion with the war.

When the Committee's decisions and recommendations have been fully approved by the organizations of the heating industry and others interested, the U.S. Weather Bureau plans to incorporate degree-day information in its regular district monthly weather summaries, to publish a new degree-day instruction booklet and to prepare an iso-degree-day map of the United States.

While it has been mutually agreed that degree-day standardization is the first task of the Committee, other problems affecting the heating industry have been advanced by members represented on the Committee and will be considered later.

A **Booklet** which has just been issued by the Newcastle and Gateshead Gas Company gives directions on the various appliances for cooking, refrigeration, and home laundry and also deals with running costs and how to read the gas meter. It is designed for the information of tenants of temporary accommodation bungalows. Under the heading of monthly payment for gas used the booklet points out: "The Company wants you to enjoy the facilities and the leisure which these new appliances offer without the cost being such as to detract from the pleasure of their usage, and for this reason is introducing a method of charge for gas consumed which will make gas available at the cheapest possible rates." The Company is also arranging for a call by a member of its Home Service Advisory Staff upon each tenant immediately on occupation of their new home to give helpful advice.

The Harrogate Gas Development Association (the local branch of the Women's Gas Council) has recently re-opened, and the Mayoress, Mrs. G. A. Spenceley, has consented to be President. A strong committee has been elected and is drawing up an attractive winter programme. The members are hoping to visit the Kitchen Planning Exhibition which is to be held at Sheffield this month.

The Half-Yearly Report of the Alliance and Dublin Consumers' Gas Company for the period ended June 30 shows a surplus on revenue account of £56,751, against £28,378 for the previous half-year. The Directors recommend an increased dividend on the Consolidated Ordinary Stock at the rate of 3% per annum, against 2% for the previous half-year, leaving £8,572 to be carried forward. The price of gas was increased by 1½d. per therm in April, to cover increased costs, but in view of the improved trading results the Company is able, in agreement with the Ministry of Supplies, to remove this increase.

Hassocks and District Gas Company refutes a newspaper statement that Hassocks and Ditchling had "no gas at all" on Aug. 27. Only one complaint reached the Company that day, and that was from a consumer whose supply had failed because a pipe required blowing out. During the summer the Company has been meeting a demand equal to a normal pre-war winter consumption.

Street Lighting Officials in Greenock have threatened to cut off all stair lighting unless the vandalism, of which gas mantles in lamps are the target, ceases at once. In preparation for the winter, stairhead lamps were, a few days ago, overhauled. Hundreds of those mantles have already been destroyed. A great deal of the damage has been caused by people lighting cigarettes or pieces of paper from the mantles.

The British Empire Medal has been awarded to Walter Johns, a gasfitter in the employ of the Bideford Gas Company, for gallant rescue work from a blazing bomber which crashed near the gas-works on Mar. 7 last. Having pulled one of the crew, the only survivor of a crew of four, clear of the burning machine, Johns climbed into the plane and tried to rescue another airman, who was unconscious, but the bottom of the cockpit collapsed and the effort proved unsuccessful.

Fittings for Copper Tubes

The British Standards Institution has recently prepared a specification for capillary fittings and compression fittings of copper or copper alloy for use with light gauge copper tube for gas, water, and sanitation services.

The specification is an extension of the original preliminary British Standard for capillary fittings issued in 1939. The specification does not attempt to complete dimensional standardization of the fittings, since the variety in the designs and methods of production already established by the various manufacturers makes any such attempt impracticable. It does, however, lay down such dimensions and requirements as are essential to ensure satisfactory installation and performance, and for the guidance of designers of piping installations, basic assembly dimensions are given for all of the most commonly used types of fittings. The specification includes a number of general requirements relating to design, consideration, and workmanship; it specifies a hydraulic test, and indicates the appropriate working pressures for cold water installations and hot water installations at various temperatures.

Copies of this Standard, No. 864 : 1945, may be obtained from the British Standards Institution, 28, Victoria Street, London, S.W. 1, price 2s.

Building Materials and Components

When Handbook No. 3—British Standards for Building Materials and Components—was issued last December, it was explained that there were still many specifications relating to building which were still in course of preparation and that when work on those was completed, the relevant details would be issued in a supplement to the Handbook. Many of the additional standards having been published, the supplement has now been prepared and issued. It includes the summarized technical requirements of 82 Standards.

Eighteen of these are revisions of standards included in Handbook No. 3 and the information about them accordingly supersedes that given in the Handbook. The new Standards cover a wide field and include domestic appliances (gas and solid fuel). An up-to-date subject index covering the two volumes has been included and indicates whether the specification required is to be found in the supplement or in the original issue of the handbook.

Copies of the supplement, price 7s. 6d., are available from the Offices of the British Standards Institution, 28, Victoria Street, Westminster, S.W. 1.

Copies of the original Handbook are still available (price 12s. 6d.) and the two volumes, which together give details of 228 Standards, can be obtained for £1 post free.

Gas Clerks' "Quiz"

During the past three years the Liverpool Gas Company has subjected over 300 girl candidates for its commercial training classes to psychological tests. Groups of about 20 girls ranging from 14 to 16 years of age, after individual questioning, are given four tests designed to assess intelligence and ability rather than factual knowledge.

The tests cover "ciphers," word meanings, "orientation" and "absurdities." The fourth of these tests contains a number of obviously absurd statements, together with four reasons why each should be rejected, and the task is to indicate which of the reasons is the correct one. The whole procedure takes about an hour. The examinations are under the direction of Mr. W. N. Deans, the Company's personnel superintendent, who is here seen conducting one of the tests.

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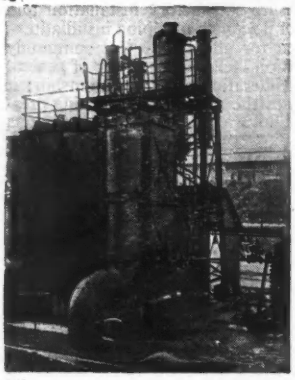
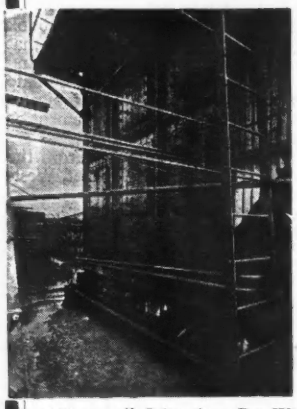
Joints



"Permac" Joints in a Gas Works.



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Products Prices—Stocks and Shares

The London Market Sept. 17.

The prices of Coal Tar Products are unchanged.

There have been two developments of interest in connexion with Coal Tar Products, the first being the cancellation of Government contracts for Toluene, and the second the issue of the Control of Benzole and Allied Products Order, 1945 (S. R. & O. 1945, No. 1064), which came into force on Sept. 1 and brings all Coal Tar Spirits under one and the same Order.

As from March 5, by the Coal Tar Products Prices Order, 1945 (S. R. & O. 1945, No. 229), the maximum price of Pitch for briquetting has been increased to 60s. per ton f.o.r. supplying works, and the prices for Road Tar, as fixed by the Coal Tar Products Prices Order, 1943, S. R. & O. No. 1528, have been increased by one half-penny per gallon. There is also an increase of 5s. per ton in the price of standard Creosote/Pitch Mixture.

Coal Tar Products Prices (No. 2) Order, 1944 (S. R. & O., 1944, No. 1051), allows increases in the maximum prices for all forms of Naphthalene.

The Provinces Sept. 17.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's. 2s. 4d. to 2s. 6¼d., pure, 3s. 2¼d. Carbolic acid, 60's, anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.), and strained anthracene oil controlled by the Coal Tar Products Prices Order, 1943, dated Oct. 20, 1943 (S. R. & O. 1943, No. 1528), operative from Nov. 15, 1943, Naphthalene controlled under S. R. & O. 1944, No. 1051, operative from Sept. 22, 1944.

Attention is called to Coal Tar Products Prices Order, 1945 (S. R. & O. 1945, No. 229), referred to on p. 305, "JOURNAL" of March 7.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Scotland Sept. 15.

Market continues rather dull. Refined tar*: Yield to distillers is 5d. per gallon *ex* Works, naked. Creosote oil: Timber preserving quality,* 5¼d. to 6¼d.; hydrogenation oil,* 5⅞d.; low gravity or virgin oil,† 7¼d. to 7½d.; benzole absorbing oil,* 6½d. to 8d. per gallon. Refined cresylic acid* is 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha†: 7d. to 8d. per gallon. Solvent naphtha*: Basic prices delivered in bulk, 90/160 grade, 2s. 10d., and 90/190 Heavy naphtha, Unrectified, 2s. 0½d.; Rectified, 2s. 4d. per gallon. Pyridine†: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

* Price controlled. † Uncontrolled.

Markets were inactive at the opening last week and price movements, though small, were mostly downwards. The tone improved as the week progressed, however, and most sections recorded a fairly long list of gains, the most marked being among gilt-edged stocks and African mining shares.

The Gas Market remained quiet, the very few price changes being almost negligible. The margin of Montevideo shortened to 5 points, while on the local Exchange Sheffield consolidated closed 1½ lower.

The following is the full list of movements during the week:

OFFICIAL LIST

Alliance & Dublin Ord. (*x.d.*) ...	112—117	Sept. 10
Brighton 5 p.c. Cons. (*x.d.*)... ...	106—111	"
Gas Light 4½ p.c. Red. Deb.... ...	107—110	+1
Imperial Continental	112—115	−2
Montevideo Ord.	122—127	−2½
Primitiva Holdings Ord.	13/6—14/6	−−/3d.
Severn Valley Ord. (*x.d.*)	23/—24/-	Sept. 10
Ditto 4½ p.c. Cum. Pref. (*x.d.*) ...	21/6—22/6	"

SUPPLEMENTARY LIST

Plymouth & Stonehouse 5 p.c. Deb. (*x.d.*)	120—125	Sept. 10

PROVINCIAL EXCHANGE

Sheffield Cons.	146—150	+1½

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TENDERS are invited for the supply and erection of an EXHAUSTER at the above works. The capacity approximately 120,000 cubic feet per hour. Further details and specifications may be obtained from the undersigned.

Tenders to be delivered to the Town Clerk, Town Hall, Macclesfield, not later than the first post October 13, 1945, and marked "Tender for Gas Exhauster."

The Committee do not bind themselves to accept the lowest or any Tender.

H. CURTIS,
Engineer and Manager.

COUNTY BOROUGH OF BLACKPOOL

(GAS DEPARTMENT)

TENDERS are invited for extensions of Gas Making Plant and Ancillary Plant at the Marton Gas-Works of the County Borough of Blackpool.

The proposed new plant comprises:

1. One WATER COOLED CONDENSER. Capacity 4 million cu.ft. per day.
2. One DRY BACK BOILER. Capacity 10,000 lb. steam per hour at 180 lb./sq. in. pressure.
3. Two complete automatic sets of CARBURETTED WATER GAS PLANT, together with Waste Heat Boilers, Automatic Clinkering; Condensers, Separators, Cooling Tower, etc. Capacity of each plant 3 million cu.ft. per day.
4. One SPIRAL Guided Two-Lift GAS HOLDER of riveted construction. Capacity 250,000 cu.ft.
5. One ELECTROSTATIC DETARRER. Capacity 4 million cu.ft. per day.
6. DISMANTLING and REMOVAL of six Purifier Boxes from the Princess Street Works and RE-ERECTION on foundations at the Marton Works.
7. One STATIC AMMONIA WASHER. Capacity 4 million cu.ft. per day.
8. One CONNERSVILLE METER. 14.42.150,000 cu.ft. per hour.

Particulars may be obtained from the Gas Engineer and General Manager, Gas Offices, Princess Street, Blackpool.

All Tenders duly filled in and endorsed "Tender for Gas Plant" and enclosed in a plain sealed envelope, and not bearing any name or mark indicating the sender, must be delivered to me not later than Monday, October 15, 1945, at the Town Hall, Blackpool.

The Council do not bind themselves to accept the lowest or any Tender.

Town Hall, Blackpool. TREVOR T. JONES, Town Clerk.

PLANT &c. FOR SALE & WANTED

'PHONE 98 STAINES.

FOR SALE.—Weir Feed Pump, 8½ in. by 6 in. by 13 in.; Spencer Hopwood Boiler, 10 ft. by 4 ft. 3 in., 90 lb.; Sectional Steel Tank, 16 ft. by 16 ft. by 4 ft.; Steel Tank, 26 ft. by 10 ft. by 8 ft.; Weir Service Pump, 7 in. by 7½ in. by 18 in.; 30 h.p. H.S. Enclosed Steam Engine; 10 h.p. Steam Turbine.

HARRY H. GARDAM & CO., LTD., STAINES.

FOR SALE.—EXHAUSTER by George Waller, capacity 40,000 cu.ft. per hour, coupled to horizontal steam engine, complete with 10 in. disc valves. Apply No. 9471, "GAS JOURNAL," 11, Bolt Court, Fleet Street, E.C. 4.

WEIGHBRIDGE.—15 ton motor Weighbridge for sale, platform 18 ft. by 8 ft. with ticket printing steelyard. Offers to No. 9473, "GAS JOURNAL," 11, Bolt Court, Fleet Street, E.C. 4.

APPOINTMENTS WANTED

MAINS - FITTINGS - DISTRIBUTION SUPERINTENDENT desires post. Capable controller of workmen and recording materials, &c. Twenty-two years in last situation. Free now.

Address No. 9474, "GAS JOURNAL," 11, Bolt Court, Fleet Street, E.C.4.

APPOINTMENTS VACANT

None of the situations advertised in these columns relates to a man between the ages of 18 and 50 inclusive or a woman between the ages of 18 and 40 inclusive, unless he or she is excepted from the provisions of the Control of Engagement Order, 1945, or the vacancy is for employment excepted from the provisions of that Order.

THE Woodall-Duckham Company has vacancies for keen energetic men for training as ASSISTANT SITE ENGINEERS, on the construction of carbonizing plants in gas-works. Good opportunity for young men under 26 on demobilization leave. Permanent progressive positions to the right men willing to work away from home and with building or civil or structural engineering experience. Salary according to Age, Qualifications and Experience. Applications, with *copies* of references, should be addressed to the Woodall-Duckham Vertical Retort and Oven Construction Co. (1920) Ltd., Uplands, Epsom Road, Guildford.

RUGBY GAS COMPANY

APPLICATIONS are invited for the Position of JUNIOR TECHNICAL ASSISTANT at the Rugby Gas Works. Candidates should have practical experience in the operation of Gas-Works Plant, particularly W.D. Vertical Retorts.

Commencing salary £300 per annum, plus 15% war bonus.

Applications, with details of Qualifications, should reach the undersigned not later than September 29, 1945.

Gas Offices, 25, Railway Terrace, Rugby. R. J. MEIKLEJOHN, Engineer and Manager.

THE CROYDON GAS COMPANY

GENERAL MANAGER

APPLICATIONS are invited for the Position of GENERAL MANAGER of the above Company. Commercial and administrative experience essential, and knowledge of the Gas Industry an added qualification. Age about 45. Minimum salary £2,100, plus a temporary War Bonus of approximately £150; co-partnership; bonus in addition and Contributory Pension Scheme, subject to passing medical examination. Effective date for engagement can be arranged.

Applications with *copies* of three Testimonials to be addressed to the Chairman at Gas Company's office, Katharine Street, Croydon, not later than October 15, 1945.

BOROUGH OF RICHMOND

IN THE COUNTY OF YORK

APPOINTMENT OF GAS ENGINEER AND MANAGER

APPLICATIONS are invited for the Appointment of Borough GAS ENGINEER AND MANAGER at a commencing Salary of £340 per annum, plus free house, coal and gas, rising by three annual increments of £20 to a maximum of £400 per annum, together with cost-of-living bonus at present amounting to £59 16s. per annum.

Applications, stating Age, Qualifications, Experience and present appointment, together with the names, address and description of two persons to whom reference may be made as to capabilities, must be received by me not later than Monday, October 1, 1945.

Corporation Offices, Richmond, Yorkshire. DAVID BROOKS, Town Clerk.

September 12, 1945.

(Classified Advertisements continued on p. 414)

APPOINTMENTS VACANT
(continued)

COUNTY BOROUGH OF ROCHDALE
(GAS DEPARTMENT)

APPLICATIONS are invited for the Position of TEMPORARY ASSISTANT CHEMIST.

Favourable consideration will be given to applicants with Gas-Works Laboratory experience.

Salary paid will be in accordance with Grade "A" of the Professional, Technical and Administrative Division of the Corporation's grading scheme (£230, rising by annual increments of £15 to £275 per annum), plus war bonus, which is at present £59 16s.

Applications, stating Age of applicant, accompanied by *copies* of two recent Testimonials and endorsed "Assistant Chemist," should be addressed to The Engineer and Manager, Gas-Works, Dane Street, Rochdale, and must be received not later than October 6, 1945.

This advertisement has been approved by the Ministry of Labour and National Service under the Control of Engagement Order, 1945.

Town Hall, Rochdale. HARRY BANN, Town Clerk.
Sept. 10, 1945.

NEWTON CHAMBERS & CO., LTD., Thorncliffe, Sheffield, require the services of two SENIOR DRAUGHTSMEN experienced in the preparation of drawings for gas-works plant. Applications, which will be treated in the strictest confidence, stating Age, Experience, and Salary required, should be sent to the Personnel Officer.

WANTED.—First-class Draughtsman, experienced in Gasholder and Gas Plant work; also Draughtsman Improver.

Apply Firth Blakeley, Sons & Co., Ltd., Church Fenton, Yorks.

MAN-POWER TROUBLES.—No doubt you find it difficult to increase the number of daily collections from your "Slot" meters. If so a gentleman with 25 years' experience in the Gas Industry is prepared to install, and maintain, a system producing an increase of at least 30% daily with more accuracy than at present.

Address P., 23, Connaught Avenue, Chingford.

COUNTY BOROUGH OF WALSALL
(GAS DEPARTMENT)

APPOINTMENT OF DRAUGHTSMAN AND ENGINEERING ASSISTANT

APPLICATIONS are invited for the above Position at a salary of £390 per annum, rising by annual increments of £15 to a maximum of £435 per annum, plus War Bonus at present being £59 16s. per annum.

Applicants must be competent draughtsmen, preferably with training or experience in the Drawing Office of a Gas Plant Contractor, and must have a good practical knowledge of the design and construction of Gas-Works Plant, Structural Engineering and Foundation Work, together with a thorough experience in the preparation of designs and specifications and with the supervision of work in progress. Some experience of Gas Distribution Systems would be an advantage.

Applicants should not be over 45 years of age.

The appointment will be terminable by one month's notice on either side, and will be subject to the provisions of the Local Government Superannuation Act, 1937. The successful candidate will be required to pass a medical examination.

Applications, stating Age, Qualifications, Experience and present position, accompanied by one recent Testimonial and names of two referees, endorsed "Draughtsman and Engineering Assistant," should reach the undersigned not later than October 13, 1945.

Candidates should state their position in relation to the Essential Works Order and National Service Acts.

Applications from persons serving in His Majesty's Forces will be considered if early release is anticipated.

Canvassing in any form is prohibited and will disqualify, and candidates must disclose whether they are related to any member of the Council.

Pleck Gas-Works, Walsall, Staffs. (Signed) A. ALLEN, Engineer and Manager.
September 10, 1945.

PETERBOROUGH GAS COMPANY

APPLICATIONS are invited for the Position of SHOWROOM MANAGER to take charge of the Company's showroom, organization of Sales Staff, Advertizing and Publicity work.

Full particulars of Age, Education, Training in Salesmanship, previous Experience, and stating Salary expected, together with *copies* of two Testimonials, to be forwarded to the undersigned not later than September 29, endorsed "Showroom Manager."

Applications from suitable candidates now serving in H.M. Forces or in War-time appointments will be given consideration.

Gas Offices, New Road, Peterborough. R. PRINCE, General Manager and Secretary.
August 31, 1945.

PETERBOROUGH GAS COMPANY

APPLICATIONS are invited for the Position of LADY COOKERY DEMONSTRATOR and Home Service Adviser at a salary of £300 per annum inclusive of War Bonus.

Applicants must be keen, good organizers, and possess the necessary experience and qualifications for this appointment.

Applications, endorsed "Demonstrator," stating Age, Qualifications, particulars of Present and Former Appointments, and approximate date available, together with *copies* of two Testimonials, to be forwarded to the undersigned not later than September 29, 1945.

Applications from suitable candidates now serving in H.M. Forces or in War-time appointments will be given consideration.

Gas Offices, New Road, Peterborough. R. PRINCE, General Manager and Secretary,
August 31, 1945.

BURGH OF PAISLEY
(GAS DEPARTMENT)

APPLICATIONS are invited for the Position of TECHNICAL (CHEMICAL) ASSISTANT. The salary grade prescribed for the post is £300, rising to £400 per annum, with placing according to qualifications and experience, plus the current war bonus of £60 per annum. The post is subject to the provisions of the Local Government Superannuation Acts, and the successful candidate will require to pass a medical examination.

Applicants should have experience in the control of vertical retorts and carburetted water gas plants, and in the recovery of benzole and the manufacture of concentrated crude ammonia; they must possess the higher grade certificate of the Institution of Gas Engineers in Gas Engineering (Manufacture), or equivalent qualification.

Applications, stating Age, Training, Experience and Qualifications, together with applicant's position in relation to the Essential Works Order and National Service Acts, and accompanied by *copies* of three recent Testimonials, should be addressed to the undersigned for receipt not later than Saturday, September 29, 1945.

The Gas-Works, Paisley, Renfrewshire. SYDNEY SMITH, Engineer and Manager.

BURGH OF PAISLEY
(GAS DEPARTMENT)

APPLICATIONS are invited for the Position of DISTRICT INSPECTOR (District Foreman: Fittings). The salary scale prescribed for the post is £260 rising to £300 per annum by increments of £20 (subject to satisfactory service) plus current war bonus of £60.

The appointment is subject to the provisions of the Local Government Superannuation Acts, and the successful candidate will require to pass a medical examination.

Applicants must have sound training and practical experience in gas-fitting and workshop practice; in the issue of work and materials; control of men; inspection of work on the district; and in the estimating of material requirements; they must possess the Final Certificate of the City and Guilds in Gas-Fitting, or an equivalent qualification.

Applications, stating Age, Qualifications, Training, Experience, present occupation, and applicant's position in relation to the National Service Acts and Essential Works Order, and accompanied by *copies* of not more than two recent Testimonials, should be addressed to the undersigned for receipt not later than Saturday, September 29, 1945.

The Gas-Works, Paisley, Renfrewshire. SYDNEY SMITH, Engineer and Manager.

APPOINTMENT OF SHIFT GENERAL FOREMAN

APPLICATIONS are invited for the Position of SHIFT GENERAL FOREMAN to work on rotating shifts including Sundays. Applicants should be Gas-Works trained and have had experience in the working of Gas Manufacture and Steam raising Plant. He must possess proved satisfactory ability to control labour and should not be more than 45 years of age. Present wage £7 14s. per week.

The appointment will be terminable by one month's notice on either side, and successful candidate will be required to pass a Medical Examination.

Applications, stating Age, Experience and present position, together with information as to the position in relation to the Essential Works Order, and enclosing *copies* of not more than three Testimonials, should be addressed to the undersigned, to be received not later than September 29, 1945.

Gas-Works, Lea Bridge Road, Leyton, E. 10. D. C. CROSS, General Manager and Engineer.

WEST'S Gas Improvement Company require the services of two or three JUNIOR TECHNICAL ASSISTANTS for their outside staff. Applicants should have had a sound education and training in gas and/or mechanical engineering. Experience in the erection and operation of gas-works carbonizing plant would be an advantage. Salary according to Age, Experience, and Professional Qualifications. Applications should be addressed to West's Gas Improvement Company, Ltd., Albion Ironworks, Manchester, 10.

THE LIVERPOOL GAS COMPANY
INDUSTRIAL DEPARTMENT.

APPLICANTS are invited for the following positions:

(*a*) TECHNICAL AND INDUSTRIAL ASSISTANT.

Applicants, who should be not more than 35, and of good address, should have had a sound technical training and experience, and be capable of working on own initiative on combustion calculations and problems concerning the use of gas in Industry and for Central Heating and Steam Raising, &c.

Applicants should be Corporate Members of the Institution of Gas Engineers or possess the Higher Grade (Supply) Certificate, and/or the Higher National or National Certificate in Mechanical Engineering or equivalent.

Capable draughtsmanship will be considered an advantage. Commencing Salary according to qualifications, but not less than £400 per annum, including cost of living bonus.

Successful applicants will be required to pass the usual pre-employment Medical Examination, and will be admissible to the Officials' Superannuation Fund. Applications should be made on the official form which may be obtained by writing to the Personnel Superintendent, Radiant House, Bold Street, Liverpool, 1, and should be returned to him not later than September 30.

(*b*) COMMERCIAL SALES ASSISTANTS (two vacancies).

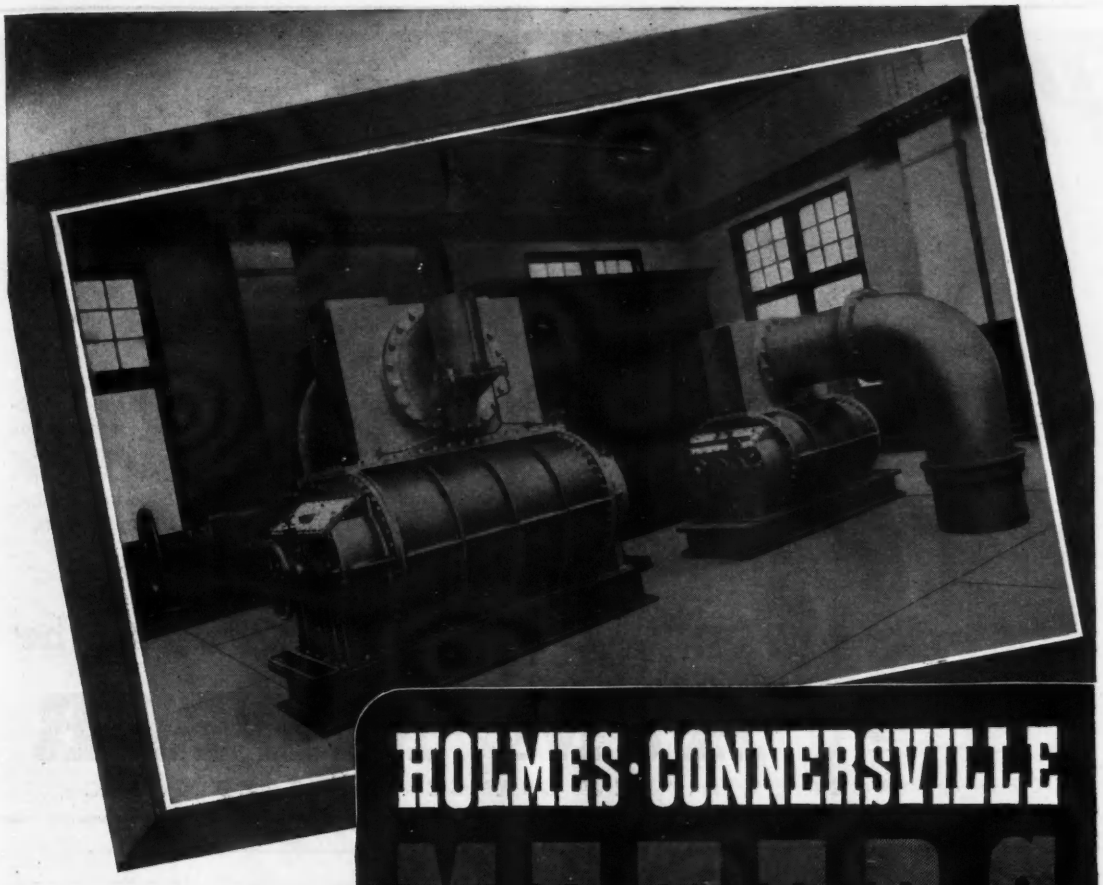
Applicants, who should be not more than 35, and of good address, should have a sound knowledge of, and experience in the choice and layout of large scale gas cooking equipment, &c., for canteens, restaurants, cafes, &c.

Applicants should preferably possess the Higher Grade (Supply) Certificate of the Institution of Gas Engineers or equivalent or should be able to give satisfactory evidence of study for such qualification.

Capable draughtsmanship will be considere c an advantage. Commencing Salary £350 per annum, inclusive of cost of living bonus. The above position provides opportunity for experience in an Industrial Department, with prospect of transfer to Technical status subject to satisfactory progress.

Successful applicants will be required to pass the usual pre-employment Medical Examination, and will be admissible to the Officials' Superannuation Fund. Applications should be made on the official form which may be obtained by writing to the Personnel Superintendent, Radiant House, Liverpool, 1, and should be returned to him not later than September 30.

Sept. 4, 1945.



HOLMES·CONNERSVILLE METERS

Illustration shows two station meters at a Scottish Gasworks having capacities of 8 and 11 million cu. ft. of gas per day respectively.

The smaller meter has been in continuous operation since installation 15 years ago, the larger meter having been added recently.

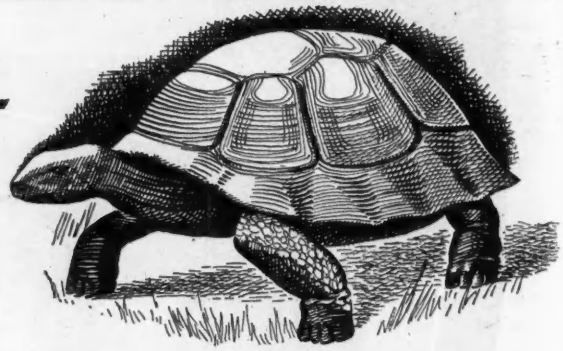
Are proved Instruments for gas measurement, giving consistently accurate results combined with freedom from mechanical breakdown over a long period of time.

FOUNDED 1850
HOLMES
HUDDERSFIELD

HEAD OFFICE • TURNBRIDGE·HUDDERSFIELD
LONDON OFFICE · 119 VICTORIA ST. SW1 · MIDLANDS OFFICE 21, BENNETT'S HILL BIRMINGHAM 2
Telephones: Huddersfield, 5280 : LONDON, Victoria, 9971 : BIRMINGHAM, Midland, 6830

C227

Protection—



THE TORTOISE.—*The land variety of the Turtle, from the Old French tortis—twisted. Of the order of reptiles CHELONIA: toothless reptiles with well-developed limbs and with dorsal and ventral shell composed of numerous bony plates.*

The tortoise is lucky indeed in that nature has provided him with adequate protection from attack. Man is not so fortunately endowed, and his need for protection extends even to his commercial and industrial life. In the Gas Industry that is where "A & M" Meters come into the picture. The "A & M" Meter is a precision instrument which records faithfully, and for an indefinite period of time, the volume of gas passing through it. Thus the "A & M" Meter affords valuable protection to supplier and consumer alike.

your *protection* is the

"A & M" METER

ALDER & MACKAY LTD., NEW GRANGE WORKS, EDINBURGH, 11

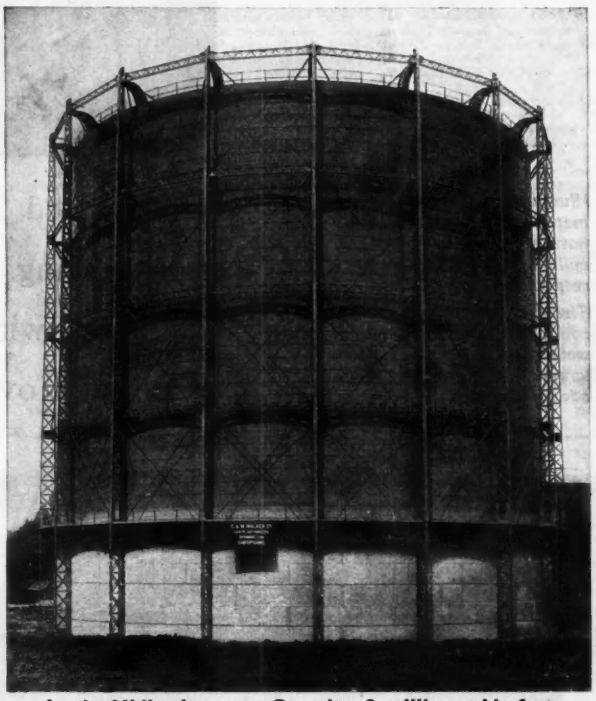
GUIDE-FRAMED GASHOLDERS

WITH OR WITHOUT
STEEL TANKS
HAVE BEEN MADE FOR
70 YEARS
OF
BRITISH MATERIALS
BY
BRITISH LABOUR
WITH
HIGHEST QUALITY IN WORKMANSHIP
BY

C. & W. WALKER

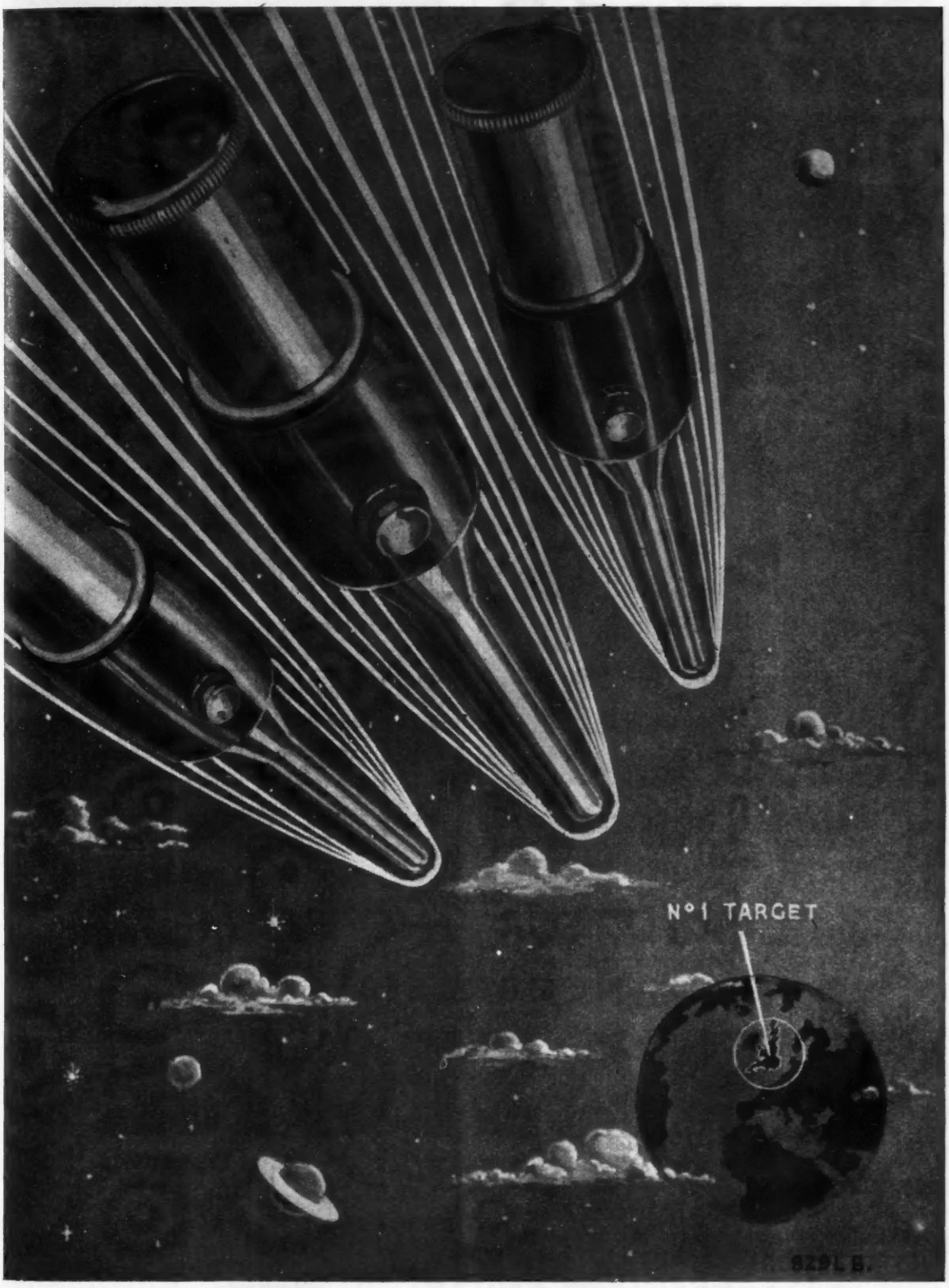
LIMITED
DONNINGTON, Nr. WELLINGTON
SHROPSHIRE

'Phone : Wellington-Shropshire 12
'Grams : "Fortress," Donnington, Shropshire



In the Midlands. Capacity, 2 million cubic feet

GASHOLDERS RIVETED OR ELECTRICALLY WELDED
LONDON OFFICE - Temporary Address: DONNINGTON, WELLINGTON, SHROPSHIRE.



THE HORSTMANN GEAR CO., LTD., NEWBRIDGE WORKS, BATH.

Planning?

HOW ABOUT FLUES?

Technical perfection is a high ideal—but not too high for our Research Department. For the new building programme, we are ready with Gas Flues and Flue Fittings right up-to-the-minute in design, finish and performance. Incorrosible Urastone has been developed throughout in co-operation with leading undertakings, and we welcome the enquiries of Gas Engineers interested in special designs.

At the time of going to press **URASTONE** is available only under Control by the Minister of Works. Full reference details available on request.

YOU'RE *RIGHT FOR THE FUTURE* WITH

INCORROSIBLE

URASTONE

GAS FLUES AND FLUE FITTINGS

CELLACTITE & BRITISH URALITE LTD.

TERMINAL HOUSE, GROSVENOR GARDENS, LONDON, S.W.1.

Phone: SLOane 5127 (4 lines). Works: HIGHAM, KENT. 'Grams: Cellactite, Sowest, London.

TAS/CL.U.300a.

36" x 18" CENTRIFUGAL—SPEED 950 R.P.M.

BROADBENT

DIRECT ELECTRICALLY-DRIVEN

CENTRIFUGALS

FOR

- AMMONIUM SULPHATE
- NAPTHALENE, ANTHRACENE

and other

- CRYSTALLINE PRODUCTS

BASKETS CONSTRUCTED FROM

BLACK STEEL
COPPER
MONEL METAL
AND
CHROMIUM NICKEL STEELS

Modern Designs in Various Types and Sizes

THOMAS BROADBENT & SONS LD.

HUDDERSFIELD TELEPHONE 5520 (6 lines) HUDDERSFIELD

LONDON MANCHESTER

LEICESTER, NEWCASTLE, GLASGOW

Gunite is PROTECTION against abrasion

Gunite—concrete applied by air pressure—has numerous applications where its great density and extreme adhesion have particular value.

For lining coal bunkers and steel chimneys it is an ideal material, possessing great resistance to corrosion and protecting steel-work from the abrasive action of the raw coal.

For repairing reinforced concrete it has particular merit, as, due to the method of application, a uniform density and adherence is obtained in whatever place the Gunite is applied, thus overcoming the common fault with hand-placed methods.

CONCRETE PROOFING CO. LTD.

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'Phone: Victoria 7877 & 6275
'Grams: Prufcrete, Phone, London

for
STREET LIGHTING
in Town & Village —

In every town and village, in fact, wherever Gas is used for Street Lighting, lamps should be fitted with Peebles Street Lamp Governors.

First, on the score of economy. As less gas is consumed, Street Lighting is cheaper.

Second, a governed lamp gives *better* light because the pressure and volume at burners is correct at *all* times, regardless of the Mains pressure.

Third, mantles last longer.

Every Public Lighting Department can make a big saving in Street Lighting costs by fitting

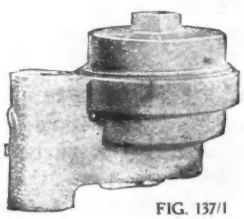


FIG. 137/1

ALSO HORIZONTAL OR FOR DOWNWARD FLOW

Peebles
STREET LAMP GOVERNORS

Sample sent to any Gas Manager for test, on request

PEEBLES & CO. LTD., TAY WORKS, BONNINGTON, EDINBURGH
Telephone: LEITH 36544 *Telegrams:* Tangent, Edinburgh

E.I.H.

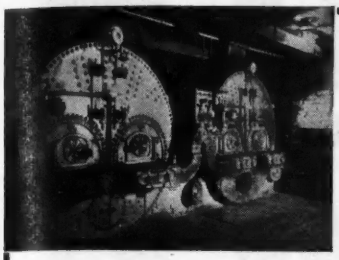
"So what?!"
Save the headache and ask
W·B&G
to help you

Don't give yourself unnecessary headaches over that job which is a worry to you, but which is just bread and butter to us !

We have solved a few thousand presswork problems in our time !

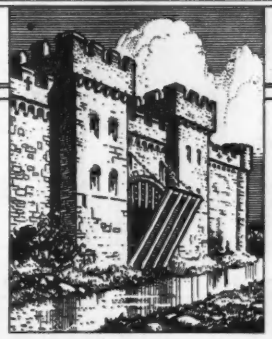
WE WORK IN ALL METALS AND TO MOST SPECIFICATIONS

WRIGHT BINDLEY & GELL LTD
PERCY ROAD, BIRMINGHAM, 11



THE
TURBINE FURNACE
has a reputation for
FUEL ECONOMY
BOILER EFFICIENCY
and the ability to give
LARGE STEAM OUTPUT
with
ALL CLASSES OF FUEL

THE
TURBINE FURNACE Co. Ltd.
238b, Cray's Inn Road,
London, W.C. 1.



PROTECTION
GAUNTLET
GAUNTLET
WEATHER TESTED PAINTS

ARCHD H. HAMILTON & CO. LTD
27-37 BARDOWIE STREET POSSILPARK GLASGOW N

HOW long IS TEMPORARY?

LANITOX (Regd.) anti-corrosive preparations are used by industrialists for protecting their products from rust and corrosion on their way from factory to customer. But Lanitox preparations are so good that we have known cases where this temporary protection has been good for as long as six years. Let us hope that time-lags won't be as long as this in our post-war world but it's good to know of an approved product as good as Lanitox. Lanitox comes in two types: one—as a Lanoline solution which protects by keeping moisture out: two—as a combination of Lanoline and rust inhibiting chemicals which protects both by exclusion and chemical action.

DRYNAMELS *COVER INDUSTRY*

DRYNAMELS LIMITED • HALL GREEN • BIRMINGHAM 28 • TELEPHONE: SPRINGFIELD 1161/2 • *DRYNAMELS SERVICE has been designed to ensure that all those who need advice on the choice and application of Industrial and Decorative finishes can readily obtain it without obligation.*

No air blast is required with this furnace, but if gas under pressure is not available a gas compressor is a necessary part of the equipment.

For heating small articles to a high temperature . . . . . .

A small but very useful furnace.

"KEITH" HIGH-PRESSURE GAS FURNACE

Ready for use 10 minutes after lighting, and will raise ¾" square steel to forging heat in two minutes.

Made in four patterns :—

"A" (as illustrated) lined with shaped firebricks for one cell 4½" x 1¾ x 6½".

"B," with two cells 1½" diam. x 6½" deep.

"C," with one cell, but two injectors.

"D," with one cell 7" x 2" x 10", and two injectors.

Each pattern complete with cast-iron tray.

A, B and C patterns consume 75 c. ft. per hour ; D pattern, 100–120 ft.

KEITH BLACKMAN LTD., MILL MEAD ROAD, LONDON, N.17. 'PHONE: TOTTENHAM 4522. 'GRAMS: KEITHBLAC PHONE LONDON

ERECTION WORK

GAS HOLDERS. OIL TANKS. STEEL BUILDINGS. CAST IRON TANKS. PURIFIERS. MAIN LAYING. PAINTING.
Sub-Contractors for any Erection Work,
REPAIRS, RE-SHEETING, DISMANTLING, & RE-ERECTION INSPECTIONS.

S. CROOKSTON & CO.
Contractors
GREATWORTH, BANBURY, OXON.

We Specialise in . .

GAS COALS

THE NEW BOWSON COAL CO.
COLLIERY AGENTS, SHIPPERS and CONTRACTORS
CINDERFORD, Glos.
Telegrams - "BOWSON CINDERFORD"

UNDERPRESSURE CONNECTIONS, SPLIT COLLARS, SOCKET CLIPS

UNDERPRESSURE

ENGINEERING CO. LTD.
UNION FOUNDRY, MANSFIELD, NOTTS.
Be Sure and Safe by using OUR PATENT "SAFETY" { C.I. TEES, PLUG CAPS / Main BAGGING DEVICE

DRILLING & TAPPING MACHINES, DRILLS, TAPS, REAMERS, etc., etc.

WESTWOOD & WRIGHTS, LTD.

GASHOLDERS · PURIFIERS · WASHERS · CONDENSERS · GAS VALVES · CASTINGS · WELDED PIPES · STEELWORK

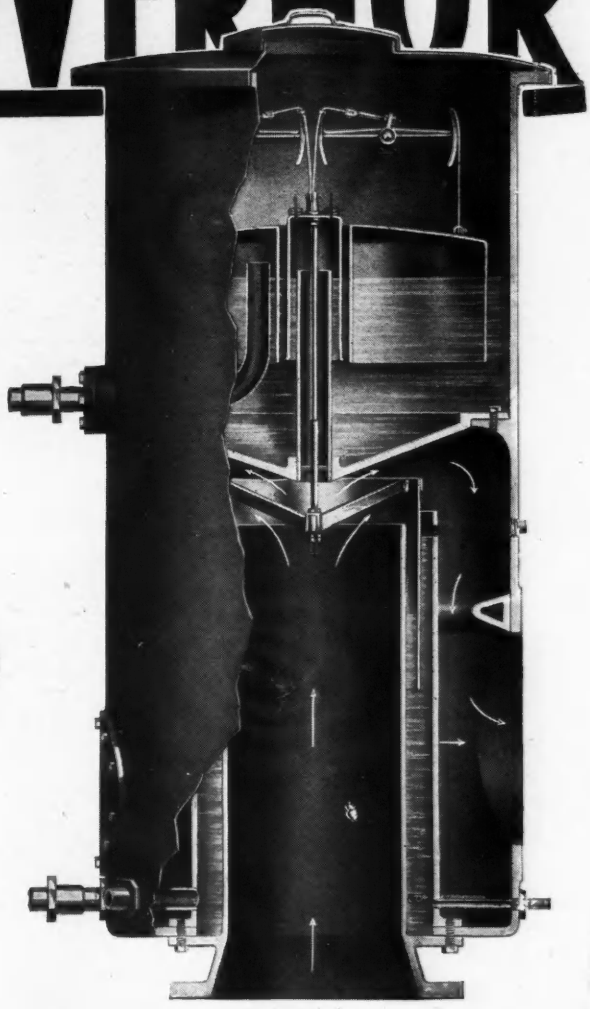
BRIERLEY HILL, STAFFS

Printed by Straker Brothers, Ltd., London, E.C.2, for Walter King, Limited, 11, Bolt Court, Fleet Street, London, E.C.4.—Wednesday, September 19, 1945.

B-K VACUUM GOVERNOR

Patent No. 395,443

SENSITIVE RETORT HOUSE GOVERNING WITHOUT 'RELAY'



- Reduction of inertia in working parts.
- Direction of tar deposition.
- Complete dust-proof enclosure.

PLEASE WRITE FOR OUR BROCHURE

W.&B.COWAN

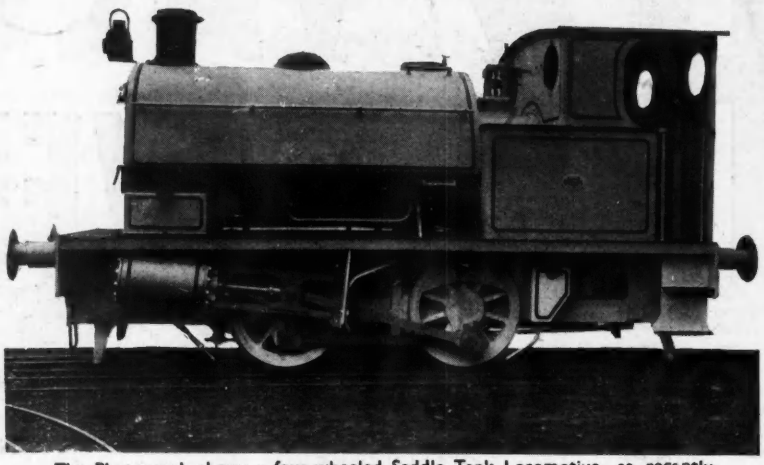
INCORPORATED IN PARKINSON & COWAN (GAS METERS) LTD.

FITZALAN STREET WORKS, KENNINGTON RD., LONDON, S.E.11; also at GLASGOW, NEWCASTLE-ON-TYNE AND MANCHESTER

GAS WORKS SHUNTING LOCOMOTIVES

BUILDERS OF ALL TYPES OF STEAM LOCOMOTIVES, ALSO WAGONS, TURN-TABLES AND OTHER RAILWAY EQUIPMENT.

LOCOMOTIVES DESIGNED TO SUIT CLIENTS RE-QUIREMENTS



The Photograph shows a four-wheeled Saddle Tank Locomotive, as recently supplied to several Gas Works.
Weight in Working Order 27 Tons. Cylinders 14" × 22"
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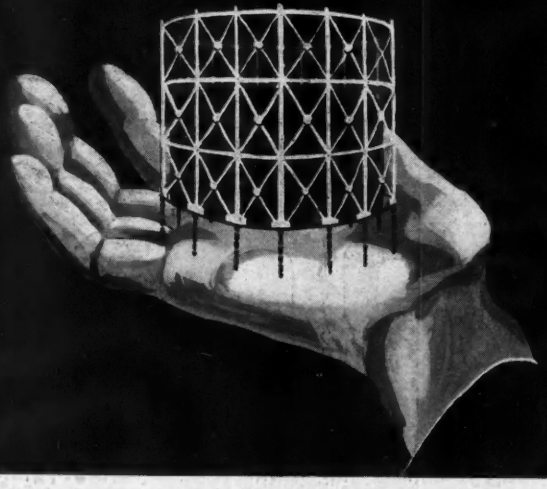

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